CA INTERMEDIATE

VIVITSU

PAPER 4

Cost & Management Accounting Reviewer

Chapter-wise compilation

RTP, MTP and PYP questions

KEY HIGHLIGHTS

- Easy to Hard Difficulty Level
- Importance levels marked as A, B or C
- Reference to all questions
- Quick recap of important concepts
- Exam Insights
- Last Day Revision Questions Marked

APPLICABLE FOR MAY'25, SEPT'25 AND JAN'26

COST & MANAGEMENT ACCOUNTING REVIEWER

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STRIVING TOWARDS KNOWLEDGE

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This book belongs to future,

CA Finalist _____

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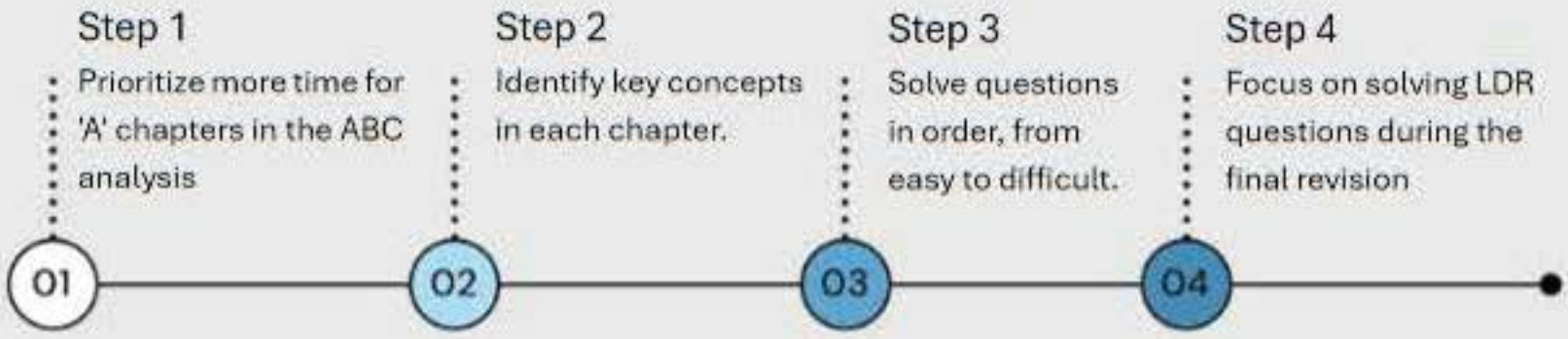

Step 1: Prioritize your chapters

Chapters in the index are categorized as A, B, or C based on their importance. Focus more on 'A' chapters, as they carry the most weight, and give adequate attention to 'B' chapters. While all chapters must be covered, this approach helps manage time efficiently for better results.

Step 2: Identify key concept

Identify the key concepts for each chapter using the list provided at the start of the chapter. Ensure you understand them thoroughly. If you struggle with a question, revisit the concepts, review them, and strengthen your understanding before moving forward.

Step 3: Start easy

Start with Question 1, as they progress from easy to difficult, helping you build confidence throughout the chapter. Pay close attention to the "EXAM INSIGHTS" to avoid common mistakes. Questions are segregated topic wise where possible.

Step 4: Last Day Revision (LDR)

Focus on solving LDR questions during the final revision. In the 1.5 days before the exam, prioritize these questions as they cover the most critical concepts from each chapter. You'll find a quick summary of LDR question numbers listed right before each chapter for easy reference.

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ABC Analysis

- **A** Very Important, Read on priority
- **B** Moderately Important
- **C** Less critical but still essential

Ensure you thoroughly read all chapters without skipping any. The ABC analysis is designed to help you prioritize based on past trends, but it should not replace comprehensive preparation.

CHAPTER 1: INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

CONCEPTS OF THIS CHAPTER	
• Cost and Management Accounting: meaning, objectives, importance. • Role and functions of Cost Accounting Department. • Installation of Cost Accounting System. • Difference: Cost, Financial, and Management Accounting. • Elements and classifications of cost. • Segregate semi-variable costs into fixed and variable. • Cost reduction vs. cost control. • Methods and techniques of costing. • Overview of Digital Costing System.	 **LDR Questions** Q 26 Q 28

Questions & Answers

Question 1

How do you deal with the following in cost accounts?

(i) Fringe benefits

(ii) Bad debts. ***(MTP 5 Marks, Oct'21)***

Answer 1

(i) Fringe benefits: These are the additional payments or facilities provided to the workers apart from their salary and direct cost-allowances like house rent, dearness and city compensatory allowances. These benefits are given in the form of overtime, extra shift duty allowance, holiday pay, pension facilities etc. These indirect benefits stand to improve the morale, loyalty and stability of employees towards the organization. If the amount of fringe benefit is considerably large, it may be recovered as direct charge by means of a supplementary wage or labour rate; otherwise, these may be collected as part of production overheads.

(ii) Bad debts: There is no unanimity among different authors of Cost Accounting about the treatment of bad debts. One view is that 'bad debts' should be excluded from cost. According to this view bad debts are financial losses and therefore, they should not be included in the cost of a particular job or product. According to another view it should form part of selling and distribution overheads, especially when they arise in the normal course of trading. Therefore, bad debts should be treated in cost accounting in the same way as any other selling and distribution cost. However extra ordinarily large bad debts should not be included in cost accounts.

Question 2

Some of the items of Wave Company, a manufacturer of corporate office furniture, are provided below. As the company is in the process of developing a formal cost accounting system, you are required to CLASSIFY the items into three categories namely: (i) Cost tracing (ii) Cost allocation (iii) Non-manufacturing item.

Carpenter wages, Depreciation - office building, Glue for assembly, Lathe department supervisor, Metal brackets for drawers, Factory washroom supplies, Lumber, Samples for trade shows, Lathe depreciation, Lathe operator wages. ***(MTP 4 Marks Mar'22)***

Answer 2

Item	Cost Tracing	Cost Allocation	Non-manufacturing
Carpenter wages	√		

Depreciation - office building			√
Glue for assembly		√	
Lathe department supervisor		√	
Metal brackets for drawers	√		
Factory washroom supplies		√	
Lumber	√		
Samples for trade shows			√
Lathe depreciation		√	
Lathe operator wages		√	

Question 3

STATE the method of costing for the following industries:

(i) **Sugar manufacturing**
(ii) **Bridge Construction**
(iii) **Advertising**
(iv) **Car Assembly** ***(MTP 4 Marks Apr'22)***

Answer 3

S. No.	Industry	Method of costing
(i)	Sugar manufacturing	Process costing
(ii)	Bridge Construction	Contract Costing
(iii)	Advertising	Job costing
(iv)	Car Assembly	Multiple Costing (Combination of any Method)

Question 4

IDENTIFY the method of costing in the following cases and give one example of industry where this method is followed:

(i) **Cost of each job is ascertained separately. It is suitable in all cases where work is undertaken on receiving a customer's order.**
(ii) **Cost of completing each stage of work is ascertained.**
(iii) **Each group is treated as a unit of cost and thus separately costed. Here cost per unit is determined by dividing the cost of the group by the number of units produced.**
(iv) **A combination of two or more methods of costing.** ***(MTP 4 Marks Nov'24)***

Answer 4

S. No.	Method of costing	Example of industry where this method is followed
(i)	Job Costing	Printing press
(ii)	Process Costing	Paper and Pulp
(iii)	Batch Costing	Bakery
(iv)	Multiple Costing	Bicycles

Question 5

Narrate the objectives of cost accounting. ***(RTP Nov'23)***

Answer 5

The main objectives of introduction of a Cost Accounting System in a manufacturing organization are as follows:

(i) Ascertainment of cost: The main objective of a Cost Accounting system is to ascertain cost for cost objects. Costing may be post completion or continuous but the aim is to arrive at a complete and accurate cost figure to assist the users to compare, control and make various decisions.
(ii) Determination of selling price: Cost Accounting System in a manufacturing organization enables to determine desired selling price after adding expected profit margin with the cost of the goods manufactured.
(iii) Cost control and Cost reduction: Cost Accounting System equips the cost controller to adhere and control

the cost estimate or cost budget and assist them to identify the areas of cost reduction.

(iv) Ascertainment of profit of each activity: Cost Accounting System helps to classify cost on the basis of activity to ascertain activity wise profitability.

(v) Assisting in managerial decision making: Cost Accounting System provides relevant cost information and assists managers to make various decisions.

Question 6

State the method of costing that would be most suitable for:

(i) Oil Refinery
(ii) Interior Decoration
(iii) Airlines Company
(iv) Advertising
(v) Car Assembly. ***(PYP 5 Marks Jan'21)***

Answer 6

Method of Costing

S.No.	Industry	Method of Costing
(i)	Oil Refinery	Process Costing
(ii)	Interior Decoration	Job Costing
(iii)	Airlines Company	Operation/ Service Costing
(iv)	Advertising	Job Costing
(v)	Car Assembly	Multiple Costing

Question 7

Specify the types of Responsibility centers under the following situations:

(i) Purchase of bonds, stocks, or real estate property.
(ii) Ticket counter in a Railway station.
(iii) Decentralized branches of an organization.
(iv) Maharana, Navratna and Miniratna public sector undertaking (PSU) of Central Government.
(v) Sales Department of an organization. ***(PYP 5 Marks Jul'21)***

Answer 7

Particulars	Types of Responsibility Centre
(i) Purchase of bonds, stocks, or real estate property.	Investment Centre
(ii) Ticket counter in a Railway station.	Revenue Centre
(iii) Decentralized branches of an organization.	Profit Centre
(iv) Maharatna, Navratna and Miniratna public sector undertaking (PSU) of Central Government.	Investment Centre
(v) Sales Department of an organization.	Revenue Centre

EXAM INSIGHTS: It was a theoretical question requiring examinees to specify the type of responsibility centre for the given five statements. Majority of the examinees failed to give clear responses to the statements. Performance of the examinees was below average.

Question 8

Identify the methods of costing from the following statements:

(i) Costs are directly charged to a group of products.
(ii) Nature of the product is complex and method cannot be ascertained.
(iii) Costs ascertained for a single product.
(iv) All costs are directly charged to a specific job.
(v) Costs are charged to operations and averaged over units produced. ***(PYP 5 Marks May'22)***

Answer 8

Method of costing followed:

Situation	Method of costing
(i) Costs are directly charged to a group of products.	Batch costing
(ii) Nature of the product is complex and method cannot be ascertained.	Multiple costing
(iii) Cost is ascertained for a single product.	Unit/ Single/Output costing
(iv) All costs are directly charged to a specific job.	Job costing
(v) Costs are charged to operations and averaged over units produced.	Process costing

EXAM INSIGHTS: This question was based on identification of methods of costing used in the given statements. Most of the examinees answered partially correct. Performance of the examinees was average.

Question 9

Mention the cost units (physical measurements) for the following Industry/product:

(i) **Automobile**
(ii) **Gas**
(iii) **Brick works**
(iv) **Power**
(v) **Steel**
(vi) **Transport (by road)**
(vii) **Chemical**
(viii) **Oil**
(ix) **Brewing**
(x) **Cement** ***(PYP 5 Marks Nov'22)***

Answer 9

Industry or Product	Cost Units
Automobile	Number
Gas	Cubic feet
Brick works	1,000 bricks
Power	Kilo-watt hour (kWh)
Steel	Tonne
Transport (by road)	Passenger- kilometer or Tonne-kilometer
Chemical	Litre, gallon, kilogram, tonne etc.
Oil	Barrel, tonne, litre
Brewing	Barrel
Cement	Ton/ per bag etc.

EXAM INSIGHTS: Theory question requiring examinees to mention the cost units (physical measurements) for the given industry/products. Most of the examinees answered it partially correct. Performance of the examinees was above average.

Question 10

Define cost objects and give examples of any four cost objects. ***(PYP 5 Marks, May'23)***

Answer 10

Definition of cost objects

Cost object is anything for which a separate measurement of cost is required. Cost object may be a product, a service, a project, a customer, a brand category, an activity, a department or a programme etc.

Examples of cost objects

Product	Smart phone, Tablet computer, SUV Car, Book etc.
Service	An airline flight from Delhi to Mumbai, Concurrent audit assignment, Utility bill payment facility etc.
Project	Metro Rail project, Road projects etc.
Activity	Quality inspection of materials, Placing of orders etc.
Process	Refinement of crudes in oil refineries, melting of billets or ingots in rolling mills etc.
Department	Production department, Finance & Accounts, Safety etc.

EXAM INSIGHTS: In this theoretical question, examinees must define the Cost Objects and give examples of any four cost objects. The performance of the examinees was poor as most of the examinees had written the objectives of cost/costing instead of cost objects.

Question 11

Answer any four of the following:

Explain very briefly the following terms used in Cost and Management Accounting:

(i) **Pre-determined Cost**

(ii) **Estimated Cost**

(iii) **Imputed Cost**

(iv) **Discretionary Cost** ***(PYP 5 Marks Nov'23)***

Answer 11

(i) Pre- Determined Cost

A cost which is computed in advance before production or operations start, on the basis of specification of all the factors affecting cost, is known as a pre-determined cost.

(ii) Estimated Cost

Estimated cost is "the expected cost of manufacture, or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase". Estimated costs are prospective costs since they refer to prediction of costs.

(iii) Imputed Cost

Imputed costs do not involve any immediate cash payment. Implicit costs are not recorded in the books of account but yet, they are important for certain types of managerial decisions such as equipment replacement and relative profitability of two alternative courses of action. They are also known as economic costs. These costs are similar to opportunity cost.

(iv) Discretionary Cost

Discretionary costs are not tied to a clear cause and effect relationship between inputs and outputs. They arise from periodic decisions regarding the maximum outlay to be incurred. Examples are -advertising, public relations, training etc.

EXAM INSIGHTS: Theory question requiring examinees to briefly explain the given terms used in Cost and Management Accounting. Most of the answers were vague and exhibited limited understanding of the terms. Overall performance of the examinees was below average.

Question 12

State the limitations of cost and management accounting. ***(MTP Oct'18, 5 Marks, RTP Nov'21)***

Answer 12

Like other branches of accounting, cost and management accounting is also having certain limitations. The limitations of cost and management accounting are as follows:

1. **Expensive:** It is expensive because analysis, allocation and absorption of overheads require considerable amount of additional work, and hence additional money.

2. **Requirement of Reconciliation:** The results shown by cost accounts differ from those shown by financial accounts. Thus Preparation of reconciliation statements is necessary to verify their accuracy.
3. **Duplication of Work:** It involves duplication of work as organization has to maintain two sets of accounts i.e. Financial Account and Cost Account.
4. **Inefficiency:** Costing system itself does not control costs but its usage does.

Question 13

DISCUSS the Standard and Discretionary Cost Centres *(MTP 5 Marks Mar'21 & Oct'23,SM)*

Answer 13

(i) **Standards Cost Centre:** Cost Centre where output is measurable and input required for the output can be specified. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation (variance) in cost is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is supposed to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.

(ii) **Discretionary Cost Centre:** The cost center whose output cannot be measured in financial terms, thus input-output ratio cannot be defined. The cost of input is compared with allocated budget for the activity. Example of discretionary cost centers are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.

Question 14

EXPLAIN the difference between product cost and period cost. *(MTP 5 Marks Apr'19, Oct'22)*

Answer 14

Product costs are those costs that are identified with the goods purchased or produced for resale. In a manufacturing organisation they are attached to the product and that are included in the inventory valuation for finished goods, or for incomplete goods. Product cost is also known as inventoriable cost. Under absorption costing method it includes direct material, direct labour, direct expenses, directly attributable costs (variable and non-variable) and other production (manufacturing) overheads. Under marginal costing method Product Costs includes all variable production costs and the all fixed costs are deducted from the contribution.

Periods costs are the costs, which are not assigned to the products but are charged as expense against revenue of the period in which they are incurred. General Administration, marketing, sales and distributor overheads are recognized as period costs.

Question 15

DEFINE cost units? WRITE the cost unit basis against each of the following Industry/Product- Automobile, Steel, Cement, Chemicals, Power and Transport. *(MTP 5 Marks Mar'23, RTP Nov'22)*

Answer 15

Cost units are usually the units of physical measurement like number, weight, area, volume, length, time and value.

Industry or Product	Cost Unit Basis
Automobile	Number
Steel	Ton
Cement	Ton/ per bag etc.
Chemicals	Litre, gallon, kilogram, ton etc.
Power	Kilo-watt hour (kWh)
Transport	Passenger- kilometer

Question 16

DISCUSS the Controllable and un-controllable variances. ***(RTP Sep'24)***

Answer 16

Controllable and un-controllable variances: The purpose of the standard costing reports is to investigate the reasons for significant variances so as to identify the problems and take corrective action.

Variances are broadly of two types, namely, controllable and uncontrollable. Controllable variances are those which can be controlled by the departmental heads whereas uncontrollable variances are those which are beyond their control. Responsibility centres are answerable for all adverse variances which are controllable and are appreciated for favourable variances. Controllability is a subjective matter and varies from situation to situation. If the uncontrollable variances are of significant nature and are persistent, the standard may need revision.

Question 17

"Technology has played a significant role in cost accounting enabling business to automate their process." EXPLAIN the impact of Information Technology in Cost Accounting in the light of above statement. ***(MTP 5 Marks Mar'24)***

Or

Discuss the impact of Information Technology in Cost Accounting.
(RTP May'24, May'22 & May'20, MTP 5 Marks Mar'19 & Apr'23 & Sep'23, PYP 5 Marks Jan'21)

Answer 17

The impact of IT in cost accounting may include the followings:

(i) After the introduction of ERPs, different functional activities get integrated and as a consequence a single entry into the accounting system provides custom made reports for every purpose and saves an organisation from preparing different sets of documents. Reconciliation process of results of both cost and financial accounting systems become simpler and less sophisticated.

(ii) A move towards paperless environment can be seen where documents like Bill of Material, Material Requisition Note, Goods Received Note, labour utilisation report etc. are no longer required to be prepared in multiple copies, the related department can get e-copy from the system.

(iii) Information Technology with the help of internet (including intranet and extranet) helps in resource procurement and mobilisation. For example, production department can get materials from the stores without issuing material requisition note physically. Similarly, purchase orders can be initiated to the suppliers with the help of extranet. This enables an entity to shift towards Just-in-Time (JIT) approach of inventory management and production.

(iv) Cost information for a cost centre or cost object is ascertained with accuracy in timely manner. Each cost centre and cost object is codified and all related costs are assigned to the cost object or cost centre. This process automates the cost accumulation and ascertainment process. The cost information can be customised as per the requirement. For example, when an entity manufactures or provide services, it can know information job-wise, batch-wise, process-wise, cost centre wise etc.

(v) Uniformity in preparation of report, budgets and standards can be achieved with the help of IT. ERP software plays an important role in bringing uniformity irrespective of location, currency, language and regulations.

(vi) Cost and revenue variance reports are generated in real time basis which enables the management to take control measures immediately.

(vii) IT enables an entity to monitor and analyse each process of manufacturing or service activity closely to eliminate non-value- added activities.

The above are examples of few areas where Cost Accounting is done with the help of IT.

Question 18

DIFFERENTIATE between cost control and cost reduction *(MTP 5 Marks, Apr'21, Apr'19, Aug'18 & Oct'23) (RTP Nov'21, May'19, Nov'18 & Nov'22 & May'23) (PYP May'19 5 Marks, PYP 5 Marks Dec'21 & May '24)*

Answer 18

Difference between Cost Control and Cost Reduction

Cost Control	Cost Reduction
1. Cost control aims at maintaining the costs in accordance with the established standards.	1. Cost reduction is concerned with reducing costs. It challenges all standards and endeavours to improvise them continuously
2. Cost control seeks to attain lowest possible cost under existing conditions.	2. Cost reduction recognises no condition as permanent, since a change will result in lower cost.
3. In case of cost control, emphasis is on past and present	3. In case of cost reduction, it is on present and future.
4. Cost control is a preventive function	4. Cost reduction is a corrective function. It operates even when an efficient cost control system exists.
5. Cost control ends when targets are achieved.	5. Cost reduction has no visible end and is a continuous process.

EXAM INSIGHTS: The theory question required knowledge of the concepts of two terms Cost Control and Cost Reduction to identify differences between them. Most of the examinees answered partly correct. Performance of the examinees was below average. In this theoretical question on 'Cost control and Cost reduction', below average performance of the examinees was observed.

Question 19

EXPLAIN the difference between Cost Accounting and Management Accounting *(MTP 5 Marks, Oct'21 & Mar'23) (RTP Nov'19, May'20 & Nov'22) (PYP 5 Marks Nov'20)*

Answer 19

Difference between Cost Accounting and Management Accounting

	Basis	Cost Accounting	Management Accounting
(i)	Nature	It records the quantitative aspect only.	It records both qualitative and quantitative aspect.
(ii)	Objective	It records the cost of producing a product and providing a service.	It Provides information to management for planning and co-ordination.
(iii)	Area	It only deals with cost Ascertainment.	It is wider in scope as it includes financial accounting, budgeting, taxation, planning etc.
(iv)	Recording of data	It uses both past and present figures.	It is focused with the projection of figures for future.
(v)	Development	Its development is related to industrial revolution.	It develops in accordance to the need of modern business world.
(vi)	Rules and Regulation	It follows certain principles and procedures for recording costs of different products.	It does not follow any specific rules and regulations.

Question 20

SUGGEST the unit of cost for following industries: *(RTP May'23)*

(a) Transport

(b) Power
(c) Hotel
(d) Hospital
(e) Steel
(f) Coal mining
(g) Professional Services
(h) Gas
(i) Engineering
(j) Oil

Answer 20

Cost units are as follows:

Industry or Product	Cost Unit Basis
Transport	Passenger- kilometer
Power	Kilo-watt hour (kWh)
Hotel	Room
Hospitals	Patient day
Steel	Ton
Coal mining	Tonne/ton
Professional services	Chargeable hour, job, contract
Gas	Cubic feet
Engineering	Contract, job
Oil	Barrel, tonne, litre

Question 21

Briefly explain the 'techniques of costing'. *(PYP 5 Marks Dec'21)*

Answer 21

Techniques	Description
Uniform Costing	When a number of firms in an industry agree among themselves to follow the same system of costing in detail, adopting common terminology for various items and processes they are said to follow a system of uniform costing. Advantages of such a system are: i. A comparison of the performance of each of the firms can be made with that of another, or with the average performance in the industry. ii. Under such a system, it is also possible to determine the cost of production of goods which is true for the industry as a whole. It is found useful when tax-relief or protection is sought from the Government.
Marginal Costing	It is defined as the ascertainment of marginal cost by differentiating between fixed and variable costs. It is used to ascertain effect of changes in volume or type of output on profit.
Standard Costing and Variance Analysis	It is the name given to the technique whereby standard costs are pre-determined and subsequently compared with the recorded actual costs. It is thus a technique of cost ascertainment and cost control. This technique may be used in conjunction with any method of costing. However, it is especially suitable where the manufacturing method involves production of standardized goods of repetitive nature.
Historical Costing	It is the ascertainment of costs after they have been incurred. This type of costing has limited utility. • Post Costing: It means ascertainment of cost after production is completed. • Continuous costing: Cost is ascertained as soon as the job is completed or even when the job is in progress.
Absorption Costing	It is the practice of charging all costs, both variable and fixed to operations, processes or products. This differs from marginal costing where fixed costs are excluded.

Direct costing	Direct costing is a specialized form of cost analysis that only uses variable costs to make decisions. It does not consider fixed costs, which are assumed to be associated with the time periods in which they are incurred.

Question 22

WHAT are the principles of estimation of costs and benefits? ***(MTP 4 Marks July'24)***

Answer 22

After identification of the costs and benefits, it is now required to be quantified i.e., the cost and benefit should be measured and estimated. The estimation is done by following the two principles as discusses below:

(i) **Variability:** Variability means by how much a cost or benefit increased or decreased due to the choice of the option. Variable costs are the cost which differs under the different volume or activities. On the other hand, fixed costs remain same irrespective of volume and activities.

(ii) **Traceability:** Traceability of cost means degree of relationship between the cost and the choice of the option. Direct costs are directly assigned to the option on the other hand indirect costsneeds to be apportioned to the option on some reasonable basis.

Question 23

DISCUSS the objectives of time keeping & time booking. ***(MTP 4 Marks Aug'24)***

Answer 23

Objectives of time keeping and time booking: Time keeping has the following two objectives:

(i) Preparation of Payroll: Wage bills are prepared by the payroll department on the basis of information provided by the time keeping department.

(ii) Computation of Cost: Labour cost of different jobs, departmentsor cost centers are computed by costing department on the basisof information provided by the time keeping department.

The objectives of time booking are as follows:

(i) To ascertain the labour time spent on a job and the idle labour hours.

(ii) To ascertain labour cost of various jobs and products.

(iii) To calculate the amount of wages and bonus payable under thewage incentive scheme.

(iv) To compute and determine overhead rates and absorption ofoverheads under the labour and machine hour method.

(v) To evaluate the performance of labour by comparing actual timebooked with standard or budgeted time.

Question 24

As per the controllability, cost can be classified as controllable & uncontrollable costs. How will you DIFFERENTIATE them? ***(MTP 4 Marks Mar'24)***

Or

EXPLAIN the difference between controllable & uncontrollable costs? ***(RTP May'24 & May'22)***

Or

DEFINE Controllable Cost and Uncontrollable Cost. ***(RTP Nov'18) (MTP 5 Marks Mar'19, Apr'23 & Sep'23)***

Answer 24

(i) **Controllable Costs:** - Cost that can be controlled, typically by a cost, profit or investment centre manager is called controllable cost. Controllable costs incurred in a particular responsibility centre can be influenced by the action of the executive heading that responsibility centre. For example, direct costs comprising direct labour, direct material, direct expenses and some of the overheads are generally controllable by the shop level management.

(ii) **Uncontrollable Costs** - Costs which cannot be influenced by the action of a specified member of an undertaking are known as uncontrollable costs. For example, expenditure incurred by, say, the tool roomis controllable by the foreman in-charge of that section but the share of the tool-room expenditure which is

apportioned to a machine shop is not to be controlled by the machine shop foreman.

Question 25

EXPLAIN the types of responsibility centres. ***(MTP 5 Marks July'24)***

Answer 25

(a) The various types of responsibility centres are as follows:

(i) **Cost Centres:** The responsibility centre which is held accountable for *incurrence of costs* which are under its control. The performance of this responsibility centre is measured against pre-determined standards or budgets. The cost centres are of two types:

(a) Standard Cost Centre and (b) Discretionary Cost Centre

(a) **Standard Cost Centre:** Cost Centre where *output is measurable and input required for the output can be specified*. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation (variance) in cost is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is expected to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.

(b) **Discretionary Cost Centre:** The cost centre *whose output cannot be measured in financial terms, thus input-output ratio cannot be defined*. The cost of input is compared with allocated budget for the activity. Examples of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.

(ii) **Revenue Centres:** The responsibility centres which are accountable for *generation of revenue for the entity*. Sales Department for example, is responsible for **achievement** of sales target and revenue generation. Though, revenue centres do not have control on expenditures it incurs but sometimes expenditures related with selling activities like commission to sales person etc. are incurred by revenue centres.

(iii) **Profit Centres:** These are the responsibility centres which have both responsibility of generation of revenue and incurrence of expenditures. Since, managers of profit centres are **accountable** for both costs as well as revenue, profitability is the basis for measurement of performance of these responsibility centres.Examples of profit centres are decentralised branches of an organisation.

(iv) **Investment Centres:** These are the responsibility centres whichare not only responsible for profitability but also have the authorityto make capital investment decisions. The performance of these responsibility centres are measured on the basis of Return on Investment (ROI) besides profit. Examples of investment centres are Maharatna, Navratna and Miniratna companies of Public Sector Undertakings of Central Government.

Question 26 LDR

DISCUSS cost classification based on variability and controllability.
(MTP 5 Marks Nov'21 & Mar'18 RTP May'21 & May'19, SM)

Answer 26

Based on this classification, costs are classified into three groups viz., fixed, variable and semi-variable.

(a) **Fixed costs**– These are the costs which are incurred for a period, and which, within certain output and turnover limits, tend to be unaffected by fluctuations in the levels of activity (output or turnover). They do not tend to increase or decrease with the changes in output. For example, rent, insurance of factory building etc., remain the same for different levels of production.

(b) **Variable Costs–** These costs tend to vary with the volume of activity. Any increase in the activity results in an increase in the variable cost and vice-versa. For example, cost of direct material, cost of direct labour, etc.

(c) **Semi-variable costs–** These costs contain both fixed and variable components and are thus partly affected by fluctuations in the level of activity. Examples of semi variable costs are telephone bills, gas and electricity etc.

Costs here may be classified into controllable and uncontrollable costs.

(a) **Controllable Costs: -** Cost that can be controlled, typically by a cost, profit or investment centre manager is called controllable cost. Controllable costs incurred in a particular responsibility center can be influenced by the action of the manager heading that responsibility centre. For example, direct costs comprising direct labour, direct material, direct expenses and some of the overheads are generally controllable by the shop floor supervisor or the factory manager.

(b) **Uncontrollable Costs -** Costs which cannot be influenced by the action of a specified member of an undertaking are known as uncontrollable costs. For example, expenditure incurred by, say, the tool room is controllable by the foreman in-charge of that section but the share of the tool-room expenditure which is apportioned to a machine shop is not controlled by the machine shop foreman.

Question 27

Describe any five benefits of the Digital Costing System. *(PYP 5 Marks Sep'24)*

Answer 27

Benefits of Digital Costing System are as follows:

(i) Ascertainment of cost with certainty on a cost object. This helps to analyse the activities for cost allocation and apportionment.

(ii) Analysis of data on time spent on each activity to study and formulate incentive plans.

(iii) Helps in material requirement planning and scheduling the materialprocurement. Data on resource consumption can be analysed for resource optimisation and finding the possibilities for zero wastage and Just-in Time (JIT).

(iv) Helps to identify and eliminate the non-value-added activities.

(v) Data on resource consumption is helpful in setting the standards and measurement of variances on real time basis.

(vi) Data on current market prices of material and consumables helps to estimate cost and setting standards on Marked to Market (M2M) basis.

(vii) Extrapolation of data on customer behaviour towards the products to predict the market demand. It is helpful is preparation of budgets and planning of production.

(viii) A better analysis of cost behaviour improves the cost benefit analysis and equipping the management in informed decision making.

Question 28

LDR

Cost and Management Accounting information is used by different stakeholders. The users of the information can be broadly categorised into internal and external to the entity.
GIVE two examples of internal users and three examples of external users and EXPLAIN how they are concerned with the Cost and Management Accounting information. *(MTP 5 Marks Nov'24)*

Answer 28

Internal Users

Internal users, who use the Cost and Management Accountinginformation may include the followings:

(a) Policy Makers- The policy makers are those who formulate strategies

(i) to achieve the goals (short & long term both) to fulfil theobjectives of the organisation.

(ii) to position the organisation into the competitive marketenvironment.

(iii) to design the organisational structure to get the policy andstrategies implemented. etc.

(b) Managers- The managers use the information

(i) to know the cost of a cost object and cost centre

(ii) to know the price for the product or service

(iii) to measure and evaluate performance of responsibilitycentres

(iv) to the know the profitability-product-wise, department-wise, customer-wise etc.

(v) to evaluate the strategic options and to make decisions

(c) Operational level staff- The operational level staff like supervisors, foreman, team leaders require information

(i) to know the objectives and performance goals for them

(ii) to know product and service specifications like volume,quality and process etc.

(iii) to know the performance parameters against which their performance is measured and evaluated.

(iv) to know divisional (responsibility centre) profitability etc.

(d) Employees- Employees are concerned with the information related with time and attendance, incentives for work, performance standards etc.

External Users

External users, who use the Cost and Management Accounting information may include the followings:

(a) Regulatory Authorities- Regulatory Authorities are concerned with cost accounting data and information for different purpose which includes tariff determination, providing subsidies, rate fixation etc. To do this the regulatory bodies require information on the basis of some standards and format in this regard.

(b) Auditors- The auditors while conducting audit of financial accounts or for some other special purpose audit like cost audit etc. require information related with costing and reports reviewed by management etc.

(c) Shareholders- Shareholders are concerned with information that effect their investment in the entity. Management communicates to the shareholders through periodic communique, annual reports etc. regarding new orders received, product expansion, market share for products etc.

(d) Creditors and Lenders- Creditors and lenders are concerned with data and information which affects an entity's ability to serve lenders or creditors. For example, any financial institutions which provides loan to an entity against book debts and inventories are more concerned with regular reporting on net debt position and stock balances.

Multiple Choice Questions (MCQ)

1. **_____is anything for which a separate measurement is required. *(SM)***

(a) Cost unit
(b) Cost object
(c) Cost driver
(d) Cost center

Ans: (b)

2. **Which of the following is true about Cost control? *(SM)***

(a) It is a corrective function
(b) It challenges the set standards
(c) It ends when targets achieved
(d) It is concerned with future

Ans: (c)

3. **Cost units used in power sector is: *(SM)***

(a) Kilo meter (K.M)
(b) Kilowatt-hour (kWh)
(c) Number of electric points
(d) Number of hours

Ans: (b)

4. **Processes Costing method is suitable for*(SM)***

(a) Transport sector
(b) Chemical industries
(c) Dam construction
(d) Furniture making

Ans: (b)

5. **Which of the following is Not true about the cost control and cost reduction:** ***(SM)***
   (a) Cost control seeks to attain lowest possible cost under best conditions.
   (b) Cost control emphasizes on past and present.
   (c) Cost reduction is a corrective function. It operates even when an efficient cost control system exists.
   (d) Cost control ends when targets are achieved.

Ans: (a)

6. **The advantage of using IT in Cost Accounting does not include:** ***(SM)***
   (a) Integration of various functions
   (b) Stock needs to be reconciled with Goods Received Note
   (c) Reduction in multicity of documents
   (d) Customized reports can be prepared.

Ans: (b)

7. **A taxi provider charges minimum ₹ 80 thereafter ₹ 12 per kilometer of distance travelled, the behaviour of conveyance cost is:** ***(SM)***
   (a) Fixed Cost
   (b) Semi-variable Cost
   (c) Variable Cost
   (d) Administrative cost.

Ans: (b)

8. **A Ltd. has three production department, and each department has two machines, which of the following cannot be treated as cost center for cost allocation:** ***(SM)***
   (a) Machines under the production department
   (b) Production departments
   (c) Both Production department and machines
   (d) A Ltd.

Ans: (d)

9. **Which of the following is an example of functional classification of cost?** ***(SM)***
   (a) Direct Material Cost
   (b) Fixed Cost
   (c) Administrative Overheads
   (d) Indirect Overheads.

Ans: (c)

10. **Ticket counter in a Railway Station is an example of** ***(SM)***
   (a) Cost Centre
   (b) Revenue Centre
   (c) Profit Centre
   (d) Investment Centre

Ans: (b)

CHAPTER 2: MATERIAL COST

CONCEPTS OF THIS CHAPTER	
• Materials: meaning, need, importance. • Procedures and documentation for procuring, storing, issuing materials. • Inventory control techniques and stock level determination. • Compute EOQ and determine optimum order quantity. • Methods of inventory accounting; prepare stock ledger. • Normal vs. abnormal loss and accounting treatment.	LDR **LDR Questions** Q 12 Q 31 Q 34 Q 35

QUICK REVIEW OF IMPORTANT CONCEPTS

A. Inventory Control by Setting Quantity Levels

(i) Re-order Stock Level (ROL):

Maximum Consumption × Maximum Re-Order Period or, ROL = Minimum Stock Level + (Average Rate of Consumption × Average Re-order period)

(ii) Re-Order Quantity/ Economic Order Quantity (EOQ):

$$EOQ = \sqrt{\frac{2x \text{ Annual Requirement (A) x Cost per order(O)}}{\text{Carrying Cost per unit per annum } (c)}}$$

(iii) Minimum Stock Level:

Minimum Stock Level = Re-order Stock Level - (Average Consumption Rate × Average Re-order Period)

(iv) Maximum Stock Level:

Maximum Stock Level = Re-order Level + Reorder Quantity - (Minimum Consumption Rate × Minimum Re-order Period)

(v) Average Inventory Level:

Average Stock Level = Minimum Stock Level + 1/2 Re-order Quantity Or

$$\text{Average Stock Level} = \frac{\text{Maximum Stock Level + Minimum Stock Level}}{2}$$

B. On the basis of Relative Classification

- **ABC Analysis** : On the basis of value and frequency of inventory
- **Fast, Slow and Non-Moving (FSN)** : On the basis of inventory turnover
- **Vital, Essential and Desirable (VED)**: Based on importance of inventory
- **High, Medium and Low (HML)**: Based on price of an item of inventory

C. Using Ratio Analysis

(i) Input Output Ratio: Input-output ratio is the ratio of the quantity of input of material to production and the standard material content of the actual output.

(ii) Inventory Turnover Ratio: Inventory Turnover Ratio $= \frac{\text{Cost of materials consumed during the period}}{\text{Cost of average stock held during the period}}$

D. Physical Control

(i) Two Bin System

(ii) Establishment of system of budgets:
(iii) Perpetual inventory records and continuous stock verification:
(iv) Continuous Stock Verification:

Treatment of Loss of Material

	Normal	Abnormal
(i) Treatment of Waste	Cost of normal waste is absorbed by good production units.	The Cost of abnormal loss is transferred to costing profit and loss account.
(ii) Treatment of Scrap	The scope of Scrap is borne by good units and income arises on account realisable value is deducted from the cost.	The scope account should be changed with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the costing profit and loss account.
(iii)Treatment of Spoilage	Normal spoilage (i.e., Which is inherent in the operation) costs are included in costs either charging the loss due to spoilage to the production order or by charging it to production overhead so that it is spread over all products.	The cost of abnormal spoilage(i.e., arising out of causes not inherent in manufacturing process) is charged to the costing profit and loss account.
(iv) Treatment of Defectives:	The cost less realisable value on sale of defectives are charged to material cost of good production.	The material cost of abnormal loss is transferred to costing profit and loss account.
(v) Treatment of Obsolescence: The value of the obsolete material held in stock is a total loss and immediate steps should be taken to dispose it off at the best available price. The loss arising out of obsolete materials on abnormal loss does not form part of the cost of manufacture.		

Just in Time (JIT) Inventory Management

JIT is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.

Questions & Answers

Theory Questions

Question 1

EXPLAIN the advantages that would accrue in using the LIFO method of pricing for the valuation of raw material stock. ***(MTP 5 Marks, Apr'21)***

Answer 1

The advantages that would accrue in using the LIFO method of pricing for the valuation of raw material stock are as follows:

- The cost of materials issued will be either nearer to and or will reflect the current market price. Thus, the cost of goods produced will be related to the trend of the market price of materials. Such a trend in price of materials enables the matching of cost of production with current sales revenues.
- The use of the method during the period of rising prices does not reflect undue high profit in the income statement as it was under the first-in-first-out or average method. In fact, the profit shown here is relatively lower because the cost of production takes into account the rising trend of material prices.
- In the case of falling prices profit tends to rise due to lower material cost, yet the finished products appear to be more competitive and are at market price.

- Over a period, the use of LIFO helps to iron out the fluctuations in profits.
- In the period of inflation LIFO will tend to show the correct profit and thus avoid paying undue taxes to some extent.

Question 2

BRIEF the treatment of following while calculating purchase cost of material: Trade Discount, Cash Discount, Penalty, Insurance charges, Commission paid. ***(MTP 5 Marks Sep'22)***

Answer 2

Trade Discount	Trade discount is deducted from the purchase price if it is not shown as deduction in the invoice.
Cash Discount	Cash discount is not deducted from the purchase price. It is treated as interest and finance charges. It is ignored.
Penalty	Penalty of any type is not included with the cost of purchase
Insurance charges	Insurance charges are paid for protecting goods during transit. It is added with the cost of purchase.
Commission paid	Commission or brokerage paid is added with the cost of purchase.

Question 3

Write a short note on VED analysis of Inventory Control. ***(PYP 5 Marks Jul'21)***

Answer 3

Vital, Essential and Desirable (VED): Under this system of inventory analysis, **inventories are classified on the basis of its criticality for the production function and final product.** Generally, this classification is done for spare parts which are used for production.

(i) **Vital-** Items are classified as vital when its **unavailability can interrupt the production process and cause a production loss.** Items under **this category are strictly controlled by setting re-order level.**

(ii) **Essential-** Items under this category are essential but not vital. **The unavailability may cause sub standardization and loss of efficiency in production process.** Items under this category are reviewed periodically and get the second priority.

(iii) **Desirable-** Items under this category are optional in nature; **unavailability does not cause any production or efficiency loss.**

EXAM INSIGHTS: It was a theoretical question requiring examinees to write a short note on the concept of VED analysis of Inventory Control. Performance of the examinees was below average.

Question 4

What is Bill of Material? Describe the uses of Bill of Material in following departments:

(i) Purchases Department

(ii) Production Department

(iii) Stores Department

(iv) Cost/Accounting Department ***(PYP 5 Marks Dec'21)***

Answer 4

Bill of Material: It is a detailed list specifying the standard quantities and qualities of materials and components required for producing a product or carrying out of any job.

Uses of Bill of Material in different department:

Purchase Department	Production Department	Stores Department	Cost/ Accounting Department
Materials are procured (purchased) on the basis of specifications mentioned in it.	Production is planned according to the nature, volume of the materials required to be used. Accordingly, material requisition lists are prepared.	It is used as a reference document while issuing materials to the requisitioning department.	It is used to estimate cost and profit. Any purchase, issue and usage are compared/ verified against this document.

EXAM INSIGHTS: This theory question on Bill of Material was not answered in the correct line. Most of the students had written the concept of invoicing of material instead of bill of material. Performance of the examinees was poor.

Question 5

EXPLAIN the Usefulness/Suitability of ABC. ***(MTP 4 Marks Nov'24)***

Answer 5

ABC is particularly needed by organisations for product costing in the following situations:

1. High amount of overhead: When production overheads are high and form significant costs, ABC is more useful than traditional costing system.
2. Wide range of products: ABC is most suitable, when, there is diversityin the product range or there are multiple products.
3. Presence of non-volume related activities: When non-volume related activities e.g. material handling, inspection set-up, are present significantly and traditional system cannot be applied, ABC is a superior and better option. ABC will identify non-value-adding activities in the production process that might be a suitable focus for attention or elimination.
4. Stiff competition: When the organisation is facing stiff competition and there is an urgent requirement to compute cost accurately andto fix the selling price according to the market situation, ABC is very useful. ABC can also facilitate in reducing cost by identifying non- value-adding activities in the production process that might be a suitable focus for attention or elimination.

Question 6

Write down the treatment of following items associated with purchase of materials.

(i) **Cash discount**
(ii) **IGST**
(iii) **Demurrage**
(iv) **Shortage**
(v) **Basic Custom Duty** ***(PYP 5 Marks May'22)***

Answer 6

Treatment of items associated with purchase of materials is tabulated as below

Sr. No.	Items	Treatment
(i)	**Cash Discount**	Cash discount is not deducted from the purchase price. It is treated as interest and finance charges. It is ignored.
(ii)	**Integrated Goods and Service Tax (IGST)**	Integrated Goods and Service Tax (IGST) is paid on inter- state supply of goods and provision of services and collected from the buyers. It is excluded from the cost of purchase if credit for the same is available. Unless mentioned specifically it should not form part of cost of purchase.

(iii)	**Demurrage**	Demurrage is a penalty imposed by the transporter for delay in uploading or offloading of materials. It is an abnormal cost and not included with cost of purchase
(iv)	**Shortage**	Shortage in materials are treated as follows: Shortage due to normal reasons: Good units absorb the cost of shortage due to normal reasons. Losses due to breaking of bulk, evaporation, or due to any unavoidable conditions etc. are the reasons of normal loss. Shortage due to abnormal reasons: Shortage arises due to abnormal reasons such as material mishandling, pilferage, or due to any avoidable reasons are not absorbed by the good units. Losses due to abnormal reasons are debited to costing profit and loss account.
(v)	**Basic Custom Duty**	Basic Custom duty is paid on import of goods from outside India. It is added with the purchase cost.

EXAM INSIGHTS: This theory question tested the basic knowledge on treatment of given item associated with purchase of material. Most of the examinees answered it on correct line. Performance of the examinees was good.

Question 7

Which system of inventory management is known as 'Demand pull' or 'Pull through' system of production? Explain. Also, specify the two principles on which this system is based.
(PYP 5 Marks Nov'22)

Answer 7

Just in Time (JIT) Inventory Management is also known as 'Demand pull' or 'Pull through' system of production. In this system, production process actually starts after the order for the products is received. Based on the demand, production process starts and the requirement for raw materials is sent to the purchase department for purchase.

It is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.

JIT is based on two principles

(i) Produce goods only when it is required and

(ii) the products should be delivered to customers at the time only when they want.

EXAM INSIGHTS: In this theory question examinees requires to identify system of inventory management which is known as 'Demand Pull' or 'Pull Through' system of production and explaining its two principles. Overall performance of the examinees was average.

Question 8

State with reasons whether the following independent statements are true or false:

(i) Under LIFO method, in the period of falling prices, lower income is reported and income-tax liability is reduced.

(ii) Under VED analysis, inventories are classified on the basis of cost of individual items.

(iii) Material requisition note is prepared by the store keeper.

(iv) Simple average pricing method is suitable when quantity purchased under each lot is different and prices fluctuate considerably.

(v) Bin card and stores ledger are maintained by the purchasing department. ***(PYP 5 Marks Nov'23)***

Answer 8

Statement No.	True/False	Reason
(i)	False	Under LIFO method, in case of falling prices profit tends to rise due to lower material cost, thus income tax liability is increased.
(ii)	False	Under VED Analysis, inventories are classified on the basis of its criticality for the production function and final product.
(iii)	False	Material Requisition Note is prepared by the production or other consuming department. It is a voucher used to get material issued from store.
(iv)	False	Simple average pricing method is suitable when the materials are received in uniform lots of similar quantity, and prices do not fluctuate considerably.
(v)	False	Bin card is maintained by the storekeeper in the store. While Stores ledger is maintained in cost accounting department.

EXAM INSIGHTS: Question requiring examinees to state with reasons whether the given independent statements were true or false. Most of the examinees could not justify their answers appropriately. Performance of the examinees was below average.

Question 9

ENUMERATE the remedial steps to be taken to minimize the labour turnover.
(MTP 4 Marks Apr'24,MTP Oct'19, 5 Marks)

Answer 9

The following steps are useful for minimizing labour turnover:

(a) Exit interview: An interview to be arranged with each outgoing employee to ascertain the reasons of his leaving the organization.

(b) Job analysis and evaluation: to ascertain the requirement of each job.

(c) Organization should make use of a scientific system of recruitment, placement and promotion for employees.

(d) Organization should create healthy atmosphere, providing education, medical and housing facilities for workers.

(e) Committee for settling workers grievances.

Question 10

DISTINGUISH clearly between Bin cards and Stores Ledger.
(MTP 4 Marks Mar'22 & Mar'23,SM)

Answer 10

Difference between Bin Card & Stores Ledger

Bin Card	Stores Ledger
It is maintained by the storekeeper in the store.	It is maintained in cost accounting department.
It contains only quantitative details of material received, issued and returned to stores.	It contains information both in quantity and value.
Entries are made when transaction takes place.	It is always posted after the transaction.
Each transaction is individual posted.	Transactions may be summarized and then posted.
Inter-department transfers do not appear in Bin Card.	Material transfers from one job to another job are recorded for costing purposes.

Question 11

State how the following items are treated in arriving at the value of cost of material purchased:

(i) Detention Charges/Fines
(ii) Demurrage
(iii) Cost of Returnable containers
(iv) Central Goods and Service Tax (CGST)
(v) Shortage due to abnormal reasons. ***(PYP 5 Marks Jan'21)***

Answer 11

Treatment of items in arriving at the value of cost of material Purchased

S. No.	Items	Treatment
(i)	**Detention charges/ Fine**	Detention charges/ fines imposed for non- compliance of rule or law by any statutory authority. It is an abnormal cost and **not included** with cost of purchase.
(ii)	**Demurrage**	Demurrage is a penalty imposed by the transporter for delay in uploading or offloading of materials. It is an abnormal cost and **not included** with cost of purchase.
(iii)	**Cost of returnable containers**	Treatment of cost of returnable containers are as follows: Returnable Containers: If the containers are returned and their costs are refunded, then cost of containers should not be considered in the cost of purchase. If the amount of refund on returning the container is less than the amount paid, then, only the short fall is added with the cost of purchase.
(iv)	**Central Goods and Service Tax (CGST)**	Central Goods and Service Tax (CGST) is paid on manufacture and supply of goods and collected from the buyer. It **is excluded** from the cost of purchase if the input credit is available for the same. Unless mentioned specifically CGST is not added with the cost of purchase.
(v)	**Shortage due to abnormal reasons**	Shortage arises due to abnormal reasons such as material mishandling, pilferage, or due to any avoidable reasons are not absorbed by the good units. Losses due to abnormal reasons are debited to costing profit and loss account.

Question 12

LDR

HOW is slow moving and non-moving item of stores detected and WHAT steps are necessary to reduce such stocks? ***(MTP 4 Marks Apr'24,SM)***

Answer 12

Detection of slow moving and non-moving item of stores:

The existence of slow moving and non-moving item of stores can be detected in the following ways.

(i) By preparing and perusing periodic reports showing the status of different items or stores.
(ii) By calculating the inventory turnover period of various items in terms of number of days/ months of consumption.
(iii) By computing inventory turnover ratio periodically, relating to the issues as a percentage of average stock held.
(iv) By implementing the use of a well designed information system.

Necessary steps to reduce stock of slow moving and non-moving item of stores:

(i) Proper procedure and guidelines should be laid down for the disposal of non-moving items, before they further deteriorates in value.
(ii) Diversify production to use up such materials.
(iii) Use these materials as substitute, in place of other materials.

Question 13

Distinguish between Waste and Scrap. Discuss the treatment of normal and abnormal scrap in Cost Accounts. ***(PYP 5 Marks May '24)***

Answer 13

Difference between Waste and Scrap

Waste	Scrap
1. The portion of raw material which is lost during storage/ production and discarded.	1. The output which is discarded and disposed off without further treatment.
2. It is connected with raw material or inputs to the production process.	2. It is the loss connected with the output
3. Waste of materials may be visible or invisible.	3. Scraps are generally identifiable and has physical substance.
4. Generally, waste has no recoverable value.	4. Scraps are termed as by- products and has small recoverable value.

Treatment of Scrap

Normal- The cost of scrap is borne by good units and income arises on account of realisable value is deducted from the cost.

Abnormal- The scrap account should be charged with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the Costing Profit and Loss Account.

Question 14

You are managing the inventory for a manufacturing company and notice that certain items in the store are not being utilized frequently, leading to increased holding costs. HOW would you identify slow-moving and non-moving items, and WHAT strategies would you implement to minimize such stocks effectively? *(MTP 4 Marks Dec'24)*

Answer 14

Detection of slow moving and non-moving item of stores:

The existence of slow moving and non-moving item of stores can be detected in the following ways.

(i) By preparing and perusing periodic reports showing the status of different items or stores.

(ii) By calculating the inventory turnover period of various items in terms of number of days/ months of consumption.

(iii) By computing inventory turnover ratio periodically, relating to the issues as a percentage of average stock held.

(iv) By implementing the use of a well-designed information system.

Necessary steps to reduce stock of slow moving and non-moving item of stores:

(i) Proper procedure and guidelines should be laid down for the disposal of non-moving items, before they further deteriorate in value.

(ii) Diversify production to use up such materials.

(iii) Use these materials as substitute, in place of other materials.

Practical Questions

Question 15

The following data are available in respect of material X for the year ended 31st March, 2021:

	(Rs.)
Opening stock	9,00,000
Purchases during the year	1,70,00,000
Closing stock	11,00,000

(i) CALCULATE:

(a) Inventory turnover ratio, and

(b) The number of days for which the average inventory is held.

(ii) INTERPRET the ratio calculated as above if the industry inventory turnover rate is 10.

(RTP Nov'21, SM)

Answer 15

(i)

(a) Inventory turnover ratio (Refer to working note)

$$= \frac{Cost\ of\ Stock\ of\ raw\ material\ Consumed}{Average\ stock\ of\ raw\ material}$$

$$= \frac{Rs.1,68,00,000}{Rs.10,00,,000} = 16.8$$

(b) Average number of days for which the average inventory is held

$$= \frac{365}{Inventory\ turnover\ ratio} = \frac{365\ days}{16.8} = 21.73 \text{ days}$$

Working Note:

Particulars	(₹)
Opening stock of raw material	9,00,000
Add: Material purchases during the year	1,70,00,000
Less: Closing stock of raw material	11,00,000
	1,68,00,000

(ii) The Inventory turnover ratio for material X is 16.8 which mean an inventory item takes only 21.73 or 22 days to issue from stores for production process. The rate is better than the industry rate which is 10 time or 36.5 days. This inventory turnover ratio indicates better inventory management system and good demand for the final product in market.

Question 16

The yearly production of a company's product which has a steady market is 40,000 units. Each unit of a product requires 1 kg. of raw material. The cost of placing one order for raw material is ₹ 1,000 and the inventory carrying cost is ₹ 20 per annum. The lead time for procurement of raw material is 36 days and a safety stock of 1,000 kg. of raw materials is maintained by the company. The company has been able to negotiate the following discount structure with the raw material supplier:

Order quantity (kg.)	Discount (₹)
Up to 6,000	NIL
6,001 – 8,000	4,000
8,001 – 16,000	20,000
16,001 – 30,000	32,000
30,001 – 45,000	4,0000

You are REQUIRED to:

(i) Calculate the re-order point considering 30 days in a month.

(ii) Prepare a statement showing the total cost of procurement and storage of raw material after considering the discount of the company elects to place one, two, four or five orders in the year.

(iii) State the number of orders which the company should place to minimize the costs after taking EOQ also into consideration. ***(MTP 10 Marks, Oct'21)***

Answer 16

(a) Working notes

1. Annual production = 40,000 units
2. Raw material required for 40,000 units (40,000 units × 1 kg.) = 40,000 kg.
3. EOQ = $\sqrt{2 \times 40,000 kgs. \times Rs.\ 1,000\ / Rs.\ 20}$ = 2,000 kgs.
4. Total cost of procurement and storage when the order size is equal to EOQ or 2,000 kg.

No. of orders (40,000 kg. ÷ 2,000 kg.)	= 20 times
Ordering cost (20 orders × ₹1,000)	= ₹ 20,000
Carrying cost (₹) (½ × 2,000 kg. × ₹ 20)	= ₹ 20,000
Total cost	₹ 40,000

(i) Re-order point = Safety stock + Lead time consumption

= 1,000 kg. + 40,000kg/360days ×36days

= 1,000 kg. + 4,000 kg. = 5,000 kg.

(ii) statement showing the total cost of procurement and storage of raw materials

(after considering the discount)

Order size	No. of orders	Total cost of procurement	Average stock	Total cost of storage of raw materials	Discount	Total cost
Kg.		(₹)	Kg.	(₹)	(₹)	(₹)
(1)	(2)	(3) = (2) ×₹1,000	(4) =½× (1)	(5) = (4)×₹20	(6)	(7) = [(3) +(5)– (6)
40,000	1	1,000	20,000	4,00,000	40,000	3,61,000
20,000	2	2,000	10,000	2,00,000	32,000	1,70,000
10,000	4	4,000	5,000	1,00,000	20,000	84,000
8,000	5	5,000	4,000	80,000	4,000	81,000

(iii) Number of orders which the company should place to minimize the costs after taking EOQ also into consideration is 20 orders each of size 2,000 kg. The total cost of procurement and storage in this case comes to ₹ 40,000, which is minimum. (Refer to working notes 3 and 4)

Question 17

The annual demand for an item of raw material is 48,000 units and the purchase price is ₹ 80 per unit. The cost of processing an order is ₹ 1,350 and the annual cost of storage is ₹ 15 per unit.

(i) DETERMINE is the optimal order quantity and total relevant cost for the order?

(ii) If the cost of processing an order is ₹ 800 and all other data remain same, then DETERMINE the differential cost?

(iii) If the supplier offers bulk purchase of 48,000 units at a price of ₹ 72 and cost of placing the is Nil, SHOULD the order be accepted? *(MTP 5 Marks Nov'21)*

Answer 17

(i) Optimal order quantity i.e. E.O.Q.

$$= \sqrt{\frac{2\times48,000\times1,350}{15}} = \sqrt{86,40,000} = 2,939 \text{ units}$$

Relevant Cost of this order quantity	₹
Ordering cost = 48,000 / 2,939 =16.33, say 17 orders at ₹ 1,350	22,950.00
Carrying Cost = ½ × 2,939 × 15	22,042.50
Relevant cost	**44,992.50**

(ii) Revised EOQ $= \sqrt{\frac{2\times48,000\times800}{15}} = 2,263$ units

Relevant Cost of this order quantity	₹
Ordering cost = 48,000 / 2,2,63 = 21.21, say 22 orders at ₹ 800	17,600.00
Carrying cost = ½ × 2,263 × 15	16,972.50
Relevant cost	**34,572.50**

Differential cost = 44,992.50 – 34,572.50 = **₹ 10,420**

(iii) In case of discount in purchase price, the total cost of Purchase cost, ordering cost and carrying cost should be compared.

Original offer at ₹ 80 per unit		Supplier offered at ₹ 72 per unit	
	₹		₹
Purchase Cost (48,000 × 80)	38,40,000.00	Purchase cost (48,000 × 72)	34,56,000.00
Ordering cost	22,950.00	Ordering cost	0.00
Carrying cost	22,042.50	Carrying cost ½ × 48,000 × 15	3,60,000.00
Total cost	38,84,992.50		38,16,000.00

Special offer at ₹ 72 per unit should be accepted as it saves ₹ 68,992.50 as compared to original offer.

Question 18

M/s SE Traders is a distributor of an electronic items. A periodic inventory of electronic items on hand is taken when books are closed at the end of each quarter. The following information is available for the quarter ended on 30th September, 2021:

Sales	**₹ 2,19,30,000**
Opening Stock	**12,500 units @ ₹ 600 per unit**
Administrative Expenses	**₹5,62,500**
Purchases (including freight inward):	
- July 1, 2021	**25,000 units @ ₹ 573 per unit**
- September 30, 2021	**12,500 units @ ₹ 630 per unit**
Closing stock- September 30, 2021	**16,000 units**

You are required to COMPUTE the following by WAM (Weighted Average Method), FIFO method and LIFO method assuming issue/ consumption pattern was even throughout the quarter:

(i) **Value of Inventory on 30th September, 2021.**

(ii) **Profit or loss for the quarter ended 30th September, 2021.** ***(MTP 10 Marks Apr'22)***

Answer 18

(i) Computation of Value of Inventory as on 30th September 2021:

Date	Particulars	Units	WAM (₹)	FIFO (₹)	LIFO (₹)
01-07-21	Opening Stock	12,500	75,00,000 (₹600×12,500)	75,00,000 (₹600×12,500)	75,00,000 (₹600×12,500)
01-07-21	Purchases	25,000	1,43,25,000 (₹573×25,000)	1,43,25,000 (₹573×25,000)	1,43,25,000 (₹573×25,000)
30-09-21	Purchases	12,500	78,75,000 (₹630×12,500)	78,75,000 (₹630×12,500)	78,75,000 (₹630×12,500)
01-07-21 to 30-09-21	Issues/ Consumption (Balancing figure)	34,000	**2,01,96,000***	**1,98,19,500****	**2,01,94,500*****
30-09-21	Closing Stock	16,000	**95,04,000**	**98,80,500**	**95,05,500**

Weighted average rate = $\frac{Rs.75,00,000+Rs.1,43,25,000+Rs.78,75,000}{(12,500+25,000+12,500)units}$ = Rs. 594

* ₹ 594 x 34,000 = ₹ 2,01,96,000

** ₹ 600 × 12,500 + ₹ 573 × 21,500 = ₹ 1,98,19,500

*** ₹ 630 × 12,500 + ₹ 573 × 21,500 = ₹ 2,01,94,500

(ii) Computation of Profit or Loss for the Quarter ended 30th September 2021

Particulars	WAM (₹)	FIFO (₹)	LIFO (₹)
Sales	2,19,30,000	2,19,30,000	2,19,30,000
Less: Consumption	2,01,96,000	1,98,19,500	2,01,94,500
Less: Administrative Exp.	5,62,500	5,62,500	5,62,500
Profit or Loss	**11,71,500**	**15,48,000**	**11,73,000**

Question 19

A company produces a product 'AB' by using two raw materials - 'Material Ae' and 'Material Be' in the ratio of 5:3.

A sales volume of 50,000 kgs is estimated for the month of December by the managers expecting the trend will continue for entire year. The ratio of input and output is 8:5.

Other Information about Raw Material Ae is as follows:

Purchase Price ₹ 150 per kg

Re-order period 2 to 3 days

Carrying Cost 12%

Note: Material Ae is perishable in nature and if not used within 3.5 days of purchase it becomes obsolete.

To place an order for material 'Ae', the company has to incur an administrative cost of ₹ 375 per order. At

present, material 'Ae' is purchased in a lot of 7,500 kgs. to avail the discount on purchase. Company works for 25 days in a month and production is carried out evenly.

You are required to CALCULATE:

(i) **Economic Order Quantity (EOQ) for Material Ae;**

(ii) **Maximum stock level for Material Ae.** ***(MTP 5 Marks Sep'22)***

Answer 19

(i) Monthly production of AB = 50,000 kgs

Raw material required = 50,000/5 x 8 = 80,000 kgs

Material Ae and Material Be ratio = 5:3

Therefore, material Ae = 80,000/8 x 5 =50,000 kgs

$$\text{Calculation of EOQ} = \sqrt{\frac{(2 \times (\text{Annual demand} \times \text{cost per order})}{\text{Annual holding cost per unit}}}$$

$$\text{EOQ} = \sqrt{\frac{2 \times 50{,}000 \text{ kgs} \times 12 \times 375}{12\% \text{ of } ₹\,150}} = \textbf{5,000 kgs}$$

(ii) Calculation of maximum stock level of Material Ae which is perishable in nature and is required to be used within 3.5 days.

(a) Stock equals to 3.5 days consumption = 50,000 kgs/ 25 days x 3.5 days = 7,000 kgs

(b) Maximum stock level for Material Ae

Maximum stock = Reorder quantity + reorder level – (minimum consumption x minimum lead time)

Where, reorder quantity = 7,500 kgs

Reorder level = maximum consumption* x maximum lead time

= 50,000/ 25 x 3 days = 6,000 kgs

Now, Maximum stock level = 7,500 kgs + 6,000 kgs – (50,000 /25 days x 2 days) = **9,500 kgs**

Stock required for 3.5 days consumption is lower than the maximum stock level calculated above. Therefore, **maximum stock level will be 7,000 kgs.**

(*since production is processed evenly throughout the month,material consumption will also be even.)

Question 20

P Limited produces product 'P'. It uses annually 60,000 units of a material 'Rex' costing ₹ 10 per unit. Other relevant information are:

Cost of placing an order	:	**₹ 800 per order**
Carrying cost	:	**15% per annum of average inventory**
Re-order period	:	**10 days**
Safety stock	:	**600 units**

The company operates 300 days in a year.

You are required to calculate:

(i) **Economic Order Quantity for material 'Rex'.**

(ii) **Re-order Level.**

(iii) **Maximum Stock Level.**

(iv) **Average Stock Level.** ***(MTP 5 Marks, Oct'23)***

Answer 20

I. Economic Order Quantity (E.O.Q)

$$= \sqrt{\frac{2X \text{ Annual requiremnet of Rex' X Ordering cost per order}}{\text{Annual Carrying cost per unit per annum}}}$$

$$= \sqrt{\frac{2 \times 60{,}000\ units \times Rs.800}{Rs.10 \times 15\%}} = \sqrt{\frac{9{,}60{,}00{,}000}{Rs.1.5}} = 8{,}000 \text{ Units}$$

II. Re-order Level = Safety Stock + (Normal daily Usage × Re-order period)

$$= 600 + \left(\frac{60{,}000\ units}{300\ days}\ X\ 10\ Days\right)$$

= 600 + 2,000

= 2,600 units

III. **Maximum Stock Level = E.O.Q (Re-order Quantity) + Safety Stock**

= 8,000 units + 600 units

= 8,600 units

IV. **Average Stock Level = Minimum Stock level + $\frac{1}{2}$ Re -order Quantity**

= 600* + $\frac{1}{2}$ 8,000 units

= 4,600 units

OR

Average Stock Level $= \frac{Maximum\ Stock\ level + Minimum\ Stock\ Level}{2}$

$= \frac{8{,}600\ units + 600\ units}{2}$

= 4,600 units

* Minimum Stock Level = Re- Order Level - (Normal daily usage × Re-order period)

= 2,600 - $\left(\frac{60{,}000\ units}{300\ days}\ X\ 10\ Days\right)$

= 2,600 – 2,000

= 600 units

OR

Minimum Stock Level = Safety Stock level = 600 units

Question 21

Following details are related to a manufacturing concern:

Re-order Level	**1,60,000 units**
Economic Order Quality	**90,000**
Minimum Stock Level	**1,00,000 units**
Maximum Stock Level	**1,90,000 units**
Average Lead Time	**6 days**
Difference between minimum lead time and Maximum lead time	**4 days**

Calculate:

(i) **Maximum consumption per day**

(ii) **Minimum consumption per day *(RTP Nov'23)***

Answer 21

Difference between Minimum lead time Maximum lead time = 4 days

Max. lead time – Min. lead time = 4 days

Or, Max. lead time = Min. lead time + 4 days..... (i)

Average lead time is given as 6 days i.e.

$\frac{Max.leadtime + Min.lead\ time}{2}$ = 6 Days .....(ii)

Putting the value of (i) in (ii),

$\frac{Min.lead\ time + 4\ Days + Min.lead\ Time}{2}$ = 6 Days

Or, Min. lead time + 4 days + Min. lead time = 12 days

Or, 2 Min. lead time = 8 days

Or, Minimum lead time = $\frac{8\ days}{2}$ = 4 Days

Putting this Minimum lead time value in (i), we get

Maximum lead time = 4 days + 4 days = 8 days

(i) **Maximum consumption per day:**

Re-order level = Max. Re-order period × Maximum Consumption per day

1,60,000 units = 8 days × Maximum Consumption per day

Or, Maximum Consumption per day = $\frac{1,60,000\ units}{8\ days}$ = 20,000 units

(ii) **Minimum Consumption per day:**

Maximum Stock Level =

Re-order level + Re-order Quantity – (Min. lead time × Min. Consumption per day)

Or, 1,90,000 units = 1,60,000 units + 90,000 units – (4 days × Min. Consumption per day)

Or, 4 days × Min. Consumption per day = 2,50,000 units – 1,90,000 units

Or, Minimum Consumption per day = $\frac{60,000\ units}{4\ days}$ = 15,000 units

Question 22

Wiwitsu Ltd. has provided the following information about the items in its inventory.

Item Code Number	Units	Unit Cost (₹)
101	25	50
102	300	01
103	50	80
104	75	08
105	225	02
106	75	12

Wiwitsu Ltd. has adopted the policy of classifying the items constituting 15% or above of Total Inventory Cost as 'A' category, items constituting 6% or less of Total Inventory Cost as 'C' category and the remaining items as 'B' category.

You are required to:

(i) Rank the items on the basis of % of Total Inventory Cost.

(ii) Classify the items into A, B and C categories as per ABC Analysis of Inventory Control adopted by Wiwitsu Ltd. ***(PYP 5 Marks Jul'21)***

Answer 22

(i) Statement of Total Inventory Cost and Ranking of items

Item code no.	Units	% of Total units	Unit cost (₹)	Total Inventory cost (₹)	% of Total Inventory cost	Ranking
101	25	3.33	50	1,250	16.67	**2**
102	300	40.00	1	300	4.00	**6**
103	50	6.67	80	4,000	53.33	**1**
104	75	10.00	8	600	8.00	**4**
105	225	30.00	2	450	6.00	**5**
106	75	10.00	12	900	12.00	**3**
	750	100	153	7,500	100	

(ii) Classifying items as per ABC Analysis of Inventory Control

Basis for ABC Classification as % of Total Inventory Cost

15% & above	--	'A' items
7% to 14%	--	'B' items
6% & Less	--	'C' items

Ranking	Item code No.	% of Total units	Total Inventory cost (₹)	% of Total Inventory Cost	Category
1	103	6.67	4,000	53.33	
2	101	3.33	1,250	16.67	
Total	2	10.00	5,250	70.00	A
3	106	10.00	900	12.00	
4	104	10.00	600	8.00	
Total	2	20.00	1,500	20.00	B
5	105	30.00	450	6.00	
6	102	40.00	300	4.00	

Total	2	70.00	750	10.00	C
Grand Total	6	100	7,500	100	

EXAM INSIGHTS: It was a practical problem on inventory control for assigning ranks based on inventory cost percentage. The second part was related to ABC classification by following the criteria given in the question. Most of the examinees answered in the correct line. Above average performance was observed.

Question 23

A Limited a toy company purchases its requirement of raw material from S Limited at ₹ 120 per kg. The company incurs a handling cost of ₹ 400 plus freight of ₹ 350 per order. The incremental carrying cost of inventory of raw material is ₹ 0.25 per kg per month. In addition the cost of working capital finance on the investment in inventory of raw material is ₹ 15 per kg per annum. The annual production of the toys is 60,000 units and 5 units of toys are obtained from one kg. of raw material.

Required:

(i) **Calculate the Economic Order Quantity (EOQ) of raw materials.**

(ii) **Advise, how frequently company should order to minimize its procurement cost. Assume 360 days in a year.**

(iii) **Calculate the total ordering cost and total inventory carrying cost per annum as per EOQ.**

(PYP 5 Marks May'22)

Answer 23

Annual requirement of raw material in kg. (A) = $\frac{60{,}000 \text{ units}}{5 \text{ units per kg}}$ = **12,000 kg.**

Ordering Cost (Handling & freight cost) (O) = ₹ 400 + ₹ 350 = ₹ 750

Carrying cost per unit per annum i.e. inventory carrying cost + working capital cost (c × i)

= (₹ 0.25 × 12 months) + ₹15

= ₹ 18 per kg

(i) **E.O.Q.** = $\sqrt{\frac{2 \times 12{,}000\text{kgs} \times ₹750}{₹18}}$ = **1,000 kg.**

(ii) **Frequency of orders for procurement:**

Annual consumption (A)= 12,000 kg.

Quantity per order (EOQ) = 1,000 kg.

No. of orders per annum $\left[\frac{A}{EOQ}\right] = \frac{12{,}000\text{kg}}{1{,}000\text{kg}} = 12$

Frequency of placing orders (in months) = $\frac{12\ months}{12\ orders}$ = **1 months**

Or, (in days) = $\frac{360 days}{12\ orders}$ = **30 days**

(iii) Calculation of total ordering cost and total inventory carrying cost as per EOQ:

	Amount/Quantity
Size of the order	1,000 kg.
No. of orders	12
Cost of placing orders	**₹ 9,000** (12 orders × ₹ 750)
Inventory carrying cost	**₹ 9,000** (1,000 kg. × ½ × ₹ 18)
Total Cost	₹18,000

EXAM INSIGHTS: This numerical question was on material cost for the calculation of Economic order Quantity (EOQ), frequency of orders, ordering cost and total inventory carrying cost per annum at EOQ level. Most of the examinees did not answer on the correct line and secured below average marks.

Question 24

Wiwitsu Ltd. uses 7500 valves per month which is purchased at a price of ₹ 1.50 per unit. The carrying cost is estimated to be 20% of average inventory investment on an annual basis. The cost to place an order and getting the delivery is ₹ 15. It takes a period of 1.5 months to receive a delivery from the date of placing an order and a safety stock of 3200 valves is desired.

You are required to determine:

(i) The Economic Order Quantity (EOQ) and the frequency of orders.

(ii) The re-order point.

(iii) The Economic Order Quantity (EOQ) if the valve cost ₹ 4.50 each instead of 1.50 each.

(Assume a year consists of 360 days) ***(PYP 5 Marks Nov'22)***

Answer 24

(i) Calculation of Economic Order Quantity

Annual requirement (A) = 7500×12= 90,000 Valves

Cost per order (O) = ₹ 15

Inventory carrying cost (i) = 20%

Cost per unit of spare (c) = ₹ 1.5

Carrying cost per unit (i × c) = ₹ 1.5 × 20% = ₹ 0.30

$$\text{Economic Order Quantity (EOQ)} = \sqrt{\frac{2 \times A \times O}{i \times c}}$$

$$= \sqrt{\frac{2 \times 90{,}000 \times 15}{0.3}} = 3{,}000 \text{ Valves}$$

Frequency of order or Number of Orders = 90,000/3,000 = 30 orders.

So Order can be placed in every 12 (360days/30) days

(ii) Re-order Quantity = {Maximum Consumption X Maximum lead time} + safety Stock

= {7500X1.5} + 3200 = 14,450 Valves

(iii) Calculation of Economic Order Quantity if valve costs ₹ 4.50

Carrying cost is 20% of ₹ 4.50 = ₹ 0.90

$$\text{Economic Order Quantity (EOQ)} = \sqrt{\frac{2 \times A \times O}{i \times c}}$$

$$= \sqrt{\frac{2 \times 90{,}000 \times 15}{0.9}}$$

= 1732.0508 units or 1733 Valves

EXAM INSIGHTS: This is a Numerical question on material cost for the calculation of Economic Order Quantity (EOQ), frequency of orders, re- order point and revised EOQ on account of change in cost. Most of the examinees could not calculate reorder point correctly. A few examinees also made mistakes in calculation of frequency of orders. Overall performance was above **average**.

Question 25

The following information pertains to ZB Limited for the year:

Profit volume ratio	30%
Margin of Safety (as % of total sales	25%
Fixed cost	₹ 12,60,000

You are required to calculate:

(i) Break even sales value (₹).

(ii) Total sales value (₹) at present,

(iii) Proposed sales value (₹) if company wants to earn the present profit after reduction of 10% in fixed cost,

(iv) Sales in value (₹) to be made to earn a profit of 20% on sales assuming fixed cost remains unchanged,

(v) **New Margin of Safety if the sales value at present as computed in (ii) decreased by 12.5%.** ***(PYP 5 Marks, May'23)***

Answer 25

i) **Calculation of Break-even sales in value:**

= Fixed Cost ÷ P/V Ratio

= ₹ 12,60,000 ÷ 30% = **₹ 42,00,000**

ii) **Calculation of Total Sales value:**

Sales value (S) = Break-even Sales + Margin of Safety

Or, S = 42,00,000 + 0.25 S

Or, 0.75 S = 42,00,000

Or, S = 42,00,000 ÷ 0.75

Or, Sales = **₹ 56,00,000**

iii) **Calculation of proposed sales value to earn present profit:**

Present profit = Sales – Variable cost – Fixed Cost

= ₹ 56,00,000 – 70% of 56,00,000 – ₹ 12,60,000

= ₹ 56,00,000 – ₹ 39,20,000 – ₹ 12,60,000

= ₹ 4,20,000

Proposed Sales value (S) = 0.7S + (90% of ₹ 12,60,000) + 4,20,000

S = 0.7S + 11,34,000 + 4,20,000

S = 15,54,000 ÷ 0.3 = **₹ 51,80,000**

iv) **Calculation of sales value to earn 20% on sales:**

Sales Value (S) = 0.7 S + 12,60,000 + 0.2S

S = 12,60,0000 ÷ 0.10 = **₹ 1,26,00,000**

v) **New Margin of Safety:**

= (Sales – BES) ÷ Sales

= (87.5% of 56,00,000 – 42,00,000) ÷ (87.5% of 56,00,000)

= (49,00,000 – 42,00,000) ÷ 49,00,000

= 7,00,000 ÷ 49,00,000 = **14.29%**

Or

= (Sales – BES)

= (87.5% of 56,00,000 – 42,00,000)

= ₹ 7,00,000

EXAM INSIGHTS: This was a numerical question related to different aspects of Marginal Costing. Many examinees could not calculate sales value to earn a profit of 20% on sales and new margin of safety. An **above average performance** was observed.

Question 26

Answer the following:

ABC Limited manufactures a product 'AM25' using material 'CEE'. The following information is available regarding material 'CEE':

Purchase price per unit	₹ 300
Cost of placing an order	₹ 150
Carrying cost per unit per annum	6% of purchase price
Consumption of material 'CEE' per annum	1,94,400 units
Lead time	Average 6 days, Maximum 8 days, Minimum 4 days

Maximum consumption of material 'CEE' per day is 200 kg more than the average consumption per day.

Required:

Calculate the following in relation to material 'CEE':

(i) **Economic Order Quantity.**

(ii) **Reorder Level**

(iii) **Maximum Stock Level. (Assume 360 days in a year)** ***(PYP 5 Marks Nov'23)***

Answer 26

(i) Economic Order Quantity (EOQ) = $\sqrt{\frac{2AO}{C}}$

Where, A= Annual demand for the material CEE = 1,94,400 Kgs

O = Ordering cost = ₹ 150

C = Carrying cost per unit per annum = 6% of ₹ 300 = 18

EOQ = $\sqrt{\frac{2\times1,94,400\times150}{18}}$ = **1,800 Units (Kgs.)**

(ii) **Re-order level (ROL) = Maximum consumption# × Maximum lead time**

ROL = 740 × 8 = **5,920 Kg.**

Maximum Consumption = Average consumption +200 kg

= $\frac{1,94,400}{360}$ + 200 = 540 + 200 Kg = 740 Kg.

Maximum lead time = 8 days

(iii) **Maximum Stock level = Re-order quantity + Re-order level – (Min. consumption* × Min. lead time)**

= 1,800 + 5,920 – (340×4)

= 7,720 – 1,360 = **6,360 Kg**

*Minimum consumption = 2 × Average consumption – Maximum Consumption

= 2 × 540 – 740

= 1080 – 740 = 340 kg.

EXAM INSIGHTS: Question on Material cost requiring calculation of Economic Order Quantity, Reorder level and Maximum Stock Level. Most of the examinees answered in the correct line and secured good marks.

Question 27

A company manufactures a product from a raw material, which is purchased at Rs.180 per kg. The company incurs a handling cost of Rs.1,460 plus freight of Rs.940 per order. The incremental carrying cost of inventory of raw material is Rs.2.5 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is Rs.18per kg per annum. The annual production of the product is 1,00,000 units and 2.5 units are obtained from one kg. of raw material.

Required:

(i) **CALCULATE the economic order quantity of raw materials.**

(ii) **DETERMINE, how frequently company should order for procurement be placed.**

(iii) **If the company proposes to rationalize placement of orders on quarterly basis, DETERMINE the percentage of discount in the price of raw materials should be negotiated? Assume 360 days in a year.**

(MTP 10 Marks May'20, RTP May'23) (Same concept different figures MTP 5 Marks Oct'18)

Answer 27

(i) Calculation of Economic Order Quantity (E.O.Q)

Annual requirement (usage) of raw material in kg. (A) = 1,00,000units / 2.5 units per kg. = 40,000kg.

Ordering Cost (Handling & freight cost) (O) = Rs.1,460 + Rs.940 = Rs.2,400

Carrying cost per unit per annum (C) i.e. inventory carrying cost + working capital cost

= (Rs.2.5 × 12 months) + Rs.18 = Rs.48 per kg.

E.O.Q. = $\sqrt{\frac{2AO}{C}}$ = $\sqrt{\frac{2\times40.000kg.\times Rs.2,400}{Rs.48}}$ = 2,000 kg.

(ii) Frequency of placing orders for procurement:

Annual consumption (A) = 40,000 kg.

Quantity per order (E.O.Q) = 2,000 kg.

No. of orders per annum $(\frac{A}{E.O.Q}) = \frac{40.000kg.}{2,000kg.}$ = 20 orders

Frequency of placing orders (in days) = $\frac{360days}{20orders}$ = 18 days

(iii) Percentage of discount in the price of raw materials to be negotiated:

Particulars	On Quarterly Basis	On E.O.Q Basis
1. Annual Usage (in Kg.)	40,000 kg.	40,000 kg.
2. Size of the order	10,000 kg.	2,000 kg.
3. No. of orders (1 ÷ 2)	4	20
4. Cost of placing orders or Ordering cost (No. of orders × Cost per order)	Rs.9,600 (4 order × Rs2,400)	Rs.48,000 (20 orders × Rs2,400)
5. Inventory carrying cost (Average inventory × Carrying cost per unit)	Rs.2,40,000 (10,000 kg. × ½ × Rs.48)	Rs.48,000 (2,000 kg. × ½ × Rs.48)
6. Total Cost (4 + 5)	Rs.2,49,600	Rs.96,000

When order is placed on quarterly basis the ordering cost and carrying cost increased by Rs.1,53,600 (Rs.2,49,600 - Rs.96,000).

So, discount required = Rs.1,53,600

Total annual purchase = 40,000 kg. × Rs.180 = Rs.72,00,000.

So, Percentage of discount to be negotiated = $\frac{Rs.1,53,600}{Rs.72,00,000} \times 100 = 2.13\%$

Question 28

A company manufactures 10,000 units of a product per month. The cost of placing an order is ₹200. The purchase price of the raw material is ₹20 per kg. The re-order period is 4 to 8 weeks. The consumption of raw materials varies from 200 kg to 900 kg per week, the average consumption being 550 kg. The carrying cost of inventory is 20% per annum.

You are required to CALCULATE:

(i) Re-order quantity (ii) Re-order level

(iii) Maximum level (iv) Minimum level

(v) Average stock level *(MTP 5 Marks Apr'23 & Mar'21) (Same concept different figures PYP 5 Marks Nov'18)*

Answer 28

(i) Reorder Quantity (ROQ) = 1,691 kg. *(Refer to working note)*

(ii) Reorder level (ROL) = Maximum usage × Maximum re-order period

= 900 kg. × 8 weeks = 7,200 kg.

(iii) Maximum level = ROL + ROQ – (Min. usage × Min. re-order period)

= 7,200 kg. + 1,691 kg. – (200 kg.× 4 weeks)

= 8,091 kg.

(iv) Minimum level = ROL – (Normal usage × Normal re-order period)

= 7,200 kg. – (550 kg. × 6 weeks)

= 3,900 kg.

(v) Average stock level = ½ (Maximum level + Minimum level)

= ½ (8,091 kg. + 3,900 kg.) = 5,995.5 kg.

OR

= Minimum Level + ½ ROQ

= 3,900 kg. + ½ X 1,691 kg. = 4,745.5 kg.

Working Note

Annual consumption of raw material (A) = (550 kg. × 52 weeks) = 28,600 kg.

Cost of placing an order (O) = ₹ 200

Carrying cost per kg. Per annum (c × i) = ₹ 20 × 20% = ₹4

Economic order quantity (EOQ) = $\sqrt{\frac{2AO}{C\,X\,i}}$

= $\sqrt{\frac{2\,X\,28{,}600\ kgs.X\ Rs.200}{Rs.4}}$ = 1,691 kg. (Approx)

EXAM INSIGHTS: In this question, performance of the examinees was below average. Most of the examinees have made mistake by taking output instead of raw material consumed figure for calculation of re order quantity.

Question 29

A company uses four raw materials A, B, C and D for a particular product for which the following data apply :–

Raw Material	Usage per unit of product (Kg.)	Re-order Quantity (Kg.)	Price per Kg. (₹)	Delivery period (in weeks)			Re- order level (Kg.)	Minimum level (Kg.)
				Minimum	Average	Maximum		
A	12	12,000	12	2	3	4	60,000	?
B	8	8,000	22	5	6	7	70,000	?
C	6	10,000	18	3	5	7	?	25,500
D	5	9,000	20	1	2	3	?	?

Weekly production varies from 550 to 1,250 units, averaging 900 units of the said product. What would be the following quantities: –

(i) Minimum Stock of A?
(ii) Maximum Stock of B?
(iii) Re-order level of C?
(iv) Average stock level of A?
(v) Re-order level of D?
(vi) Minimum Stock level of D? ***(RTP Nov'20) (Same concept different figures MTP 5 Marks, Apr'21, SM)***

Answer 29

(i) Minimum stock of A

Re-order level – (Average consumption × Average time required to obtain delivery)
= 60,000 kg. – (900units × 12 kg. × 3 weeks) = 27,600 kg.

(ii) Maximum stock of B

Re-order level + Re-order quantity– (Min. Consumption × Min. Re-order period)
= 70,000 kg.+ 8,000 kg– (550units ×8 kg.× 5 weeks).
=78,000–22,000 = 56,000 kg.

(iii) Re-order level of C

Maximum re-order period × Maximum Usage
= 7 weeks × (1,250units × 6 kg.) = 52,500 kg.

OR

= Minimum stock of C+(Average consumption × Average delivery time)
= 25,500 kg.+ [(900 units ×6 kg.)×5 weeks] =52,500 kg.

(iv) Average stock level of A

= $\frac{Minimum\ Stock+Maximum\ Stock}{2}$ (Refer to Working Note)

= $\frac{27{,}600+58{,}800}{2}$ = 43,200 kg.

Working note

Maximum stock of A = ROL + ROQ – (Minimum consumption × Minimum re-order period)
= 60,000 kg. + 12,000 kg. – [(550units × 12 kg.) × 2 weeks] = 58,800 kg.

(v) Re-order level of D

Maximum re-order period × Maximum Usage
= 3 weeks × (1,250 units × 5 kg.) = 18,750 kg

(vi) Minimum stock of D

Re-order level – (Average consumption × Average time required to obtain delivery)
= 18,750 kg. – (900units × 5 kg. × 2 weeks) = 9,750 kg.

Question 30

Wavelength Ltd. uses two types of raw materials – 'Material A' and 'Material B' in the production process and has provided the following data for the year ended on 31 st March, 2021:

Particulars	Material A (₹)	Material B (₹)
Opening stock as on 01.04.2020	30,000	32,000
Purchase during the year	90,000	51,000
Closing stock as on 31.03.2021	20,000	14,000

(i) You are required to calculate:
(a) The inventory turnover ratio of 'Material A' and 'Material B'.
(b) The number of days for which the average inventory is held for both materials 'A' and 'B'.
(ii) Based on above calculations, give your comments. (Assume 360 days in a year.)
(PYP 5 Marks Dec '21 & May'18)

Answer 30

(i) Calculation of Inventory Turnover ratios and number of days:

	Material A (₹)	Material B (₹)
Opening stock	30,000	32,000
Add: Purchases	90,000	51,000
	1,20,000	83,000
Less: Closing stock	20,000	14,000
Materials consumed	1,00,000	69,000
Average inventory: (Opening Stock + Closing Stock) ÷ 2	25,000	23,000
(a) Inventory Turnover ratio: (Consumption ÷ Average inventory)	4 times	3 times
(b) Number of days for which the average inventory held (Number of Days in a year/IT ratio)	90 days	120 days

(ii) Comments: Material A is moving faster than Material B. Or Material A has a less holding period.

EXAM INSIGHTS: This Numerical question on Material Costing for the calculation of inventory turnover ratio and number of days for which inventory held. Most of the examinees answered in the correct line and secured good marks.

Question 31

LDR

Tesco cycles Ltd. used about 3,60,000 cycle locks per annum and the usage is fairly constant at 30,000 per month. The cycle lock costs ₹ 240 each at wholesale rate and carrying cost is estimated to be 10% of the annual average inventory value. The cost to place an order is ₹ 1200. It takes 45 days to receive delivery from the date of order. In order to avoid any kind of disruption in assembly line, safety stock of 6,500 cycle locks is always maintained by Tesco Cycles Ltd.(Assume 360 days in a year).
Compute:
(i) E.O.Q.
(ii) The re-order level.
(iii) The company has been offered a quantity discount of 2% on the purchase of cycle locks provided the order size is 30,000 units at a time. Advise whether quantity discount offer can be accepted?
(PYP 5 Marks May '24) (Same concept different figures MTP 5 Marks Apr'24 Mar'23 & Oct'20, PYP May'18, SM)

Answer 31

(i) Calculation of Economic Order Quantity

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 3,60,000\ units \times ₹1200}{₹24}} = 6,000 \text{ units}$$

Where,

A = Annual Demand = 3,60,000 units

O = Ordering cost per order = ₹1200

C = Inventory carrying cost per unit per annum = 10% of ₹240 = ₹ 24

(ii) Re-order Level = Safety Stock + Lead Time Consumption

= 6,500 + (1,000 x 45) units = **51,500 units**

Or,

Minimum level of cycle locks + [Average rate of consumption × Average time required to obtain fresh delivery]

= 6,500 + (1,000 x 45) units = **51,500 units**

(iii) Evaluation of Profitability of Different Options of Order Quantity

(a) When EOQ is ordered (order size of 6,000 units)

		(₹)
Purchase Cost	(3,60,000 units × ₹ 240)	8,64,00,000
Ordering Cost	[(3,60,000 units/6,000 units) × ₹ 1,200]	72,000
Carrying Cost	(6,000 units × ₹240 × ½ × 10/100)	72,000
Total Cost		**8,65,44,000**

(b) When Quantity Discount is accepted (order size of 30,000 units)

		(₹)
Purchase Cost	[3,60,000 units × ₹ 235.2 (240- 4.8)]	8,46,72,000
Ordering Cost	[(3,60,000 units/30,000 units) × ₹1,200]	14,400
Carrying Cost	(30,000 units × ₹ 235.2 ×½ × 10/100)	3,52,800
Total Cost		**8,50,39,200**

Advise – The total cost of inventory is lower if discount is accepted. Hence, the company is advised to accept the quantity discount.

Question 32

The following are the details of receipts and issues of a material of stores in a manufacturing company for the period of three months ending 30th June, 2022:

Receipts:

Date	Quantity (kg.)	Rate per kg. (₹)
April 10	1,600	50.00
April 20	2,400	49.00
May 5	1,000	51.00
May 17	1,100	52.00
May 25	800	52.50
June 11	900	54.00
June 24	1,400	55.00

There was 1,500 kg. in stock at April 1, 2022 which was valued at ₹ 48.00 per kg.

Issues:

Date	Quantity (kg.)
April 4	1,100
April 24	1,600
May 10	1,500
May 26	1,700
June 15	1,500
June 21	1,200

Issues are to be priced on the basis of weighted average method.

The stock verifier of the company reported a shortage of 80 kgs. on 31st May, 2022 and 60 kgs. on 30th June, 2022. You are required to PREPARE a Stores Ledger Account. ***(MTP 10 Marks Oct'22)***

Answer 32

Stores Ledger Account for the three months ending 30th June, 2022 (Weighted Average Method)

Date	Receipts				Issues				Balance		Rate for further Issue (Rs.)
	GRN No.	Qty. (Kg.)	Rates (Rs.)	Amounts	MR No.	Qty. (Kg.)	Rates (Rs.)	Amount (Rs.)	Qty. (Kg.)	Amount (Rs.)	
April 1									1,500	72,000	48.00
April 4						1,100	48.00	52,800	400	19,200	48.00
April 10		1,600	50.00	80,000					2,000	99,200	$\frac{99,200}{2,000} = 49.60$
April 20		2,400	49.00	1,17,600					4,400	216,800	$\frac{2,16,800}{4,400} = 49.30$
April 24						1,600	49.30	78,880	2,800	137,920	$\frac{1,37,920}{2,800} = 49.30$
May 5		1,000	51.00	51,000					3,800	188,920	$\frac{1,88,920}{3,800} = 49.70$
May 10						1,500	49.70	74,550	2,300	114,370	$\frac{1,14,370}{2,300} = 49.70$
May 17		1,100	52.00	57,200					3,400	171,570	$\frac{1,71,570}{3,400} = 50.50$
May 25		800	52.50	42,000					4,200	213,570	$\frac{2,13,570}{4,200} = 50.90$
May 26						1,700	50.90	86,530	2,500	127,040	$\frac{1,27,040}{2,500} = 50.90$
May 31					Shortage	80			2,420	127,040	$\frac{1,27,040}{2,420} = 52.50$
June 11		900	54.00	48,600					3,320	175,640	$\frac{1,75,640}{3,320} = 52.90$
June 15						1,500	52.90	79,350	1,820	96,290	$\frac{96,290}{1,820} = 52.90$
June 21						1,200	52.90	63,480	620	32,810	$\frac{32,810}{620} = 52.90$
June 24		1,400	55.00	77,000					2,020	109,810	$\frac{1,09,810}{2,020} = 54.40$
June 30					Shortage	60			1,960	109,810	$\frac{1,09,810}{1,960} = 56.00$

Question 33

M/s Tanishka Materials Private Limited produces a product which names "ESS". The consumption of raw material for the production of "ESS" is 210 Kgs to 350 Kgs per week. Other information is as follows:

Procurement Time:	**5 to 9 Days**
Purchase price of Raw Materials:	**₹ 100 per kg**
Ordering Cost per Order:	**₹ 200**
Storage Cost:	**1% per month plus ₹ 2 per unit per annum**

Consider 365 days a year.

You are required to CALCULATE:

(a) **Economic Order Quantity**
(b) **Re-Order Level (ROL)**
(c) **Maximum Stock Level**
(d) **Minimum Stock Level**
(e) **Average Stock Level**
(f) **Number of Orders to be placed per year**
(g) **Total Inventory Cost**
(h) **If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders, whether offer is acceptable?**
(i) **If the Answer is no, what should be the counteroffer w.r.t. percentage of discount?** ***(RTP Nov'22)***

Answer 33

As procurement time is given in days, consumption should also be calculated in days:

Maximum Consumption per Day: $\frac{350}{7} = 50\ kgs$

Minimum Consumption per Day $\frac{210}{7} = 30\ kgs$

Average Consumption per Day $\frac{(50+30)}{2} = 40\ kgs$

(a) **Calculation of Economic Order Quantity (EOQ)**

Annual consumption of Raw Materials (A): 40 Kgs x 365 days = 14,600 Kgs

Storage or Carrying Cost per unit per annum (C):(₹ 100 x 1% x 12 months) + ₹ 2 = ₹ 14

Ordering Cost (O): ₹ 200 per Order

$$EOQ = \sqrt{\frac{2 \times A \times 0}{c}}$$

$$\sqrt{\frac{2 \times 14,600 \times 200}{14}} = 646 \text{ Kgs.}$$

(b) **Re-Order Level (ROL)** = (Maximum consumption Rate × Maximum Procurement Time)

= 50 kgs per day × 9 days

= 450 kgs

(c) **Maximum Stock Level** =Recorder Level + Recorder Quantity – (Minimum Consumption Rate × Minimum Procurement Time)

= 450 kgs + 646 kgs - (30 kgs X 5 days) = 946 kgs

(d) **Minimum Stock Level** = Recorder Level – (Average consumption Rate × Average Procurement Time)

= 450 kgs – (40 kgs X 7 days) = 170 kgs

(e) **Average Stock Level** = $\frac{\text{Maximum Stock Level + Minimum Stock Level}}{2}$

$= \frac{946 \text{ kgs} + 170 \text{ kgs}}{2} = 558 \text{ kgs}$

(f) **Number of Orders to be placed per year**

$$= \frac{\text{Annual Consumption of Raw Materials}}{EOQ}$$

$= \frac{14600 kgs}{646 kgs}$ = 22.60 Orders or 23 Orders

(g) **Total Inventory Cost**

Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 100)	= ₹ 14,60,000
Total Ordering Cost (No. of Orders x O) (23 Orders x 200)	= ₹ 4,600
Total Carrying Cost (EOQ / 2 x C) (646 kgs / 2 x ₹ 14)	= ₹ 4,522

Total Inventory Cost = ₹ 14,69,122

(h) **If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders:**

Offer Price	= ₹ 100 x 99%	= ₹ 99
Revised Carrying Cost = (₹ 99 x 1% x 12 months) + ₹2		= ₹ 13.88
Revised Order Quantity = 14600 kgs / 2 Orders		= 7300 kgs
Total Inventory Cost at Offer Price		
Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 99)		= ₹ 14,45,400
Total Ordering Cost (No. of Orders x O) (2 Orders x 200)		= ₹ 400
Total Carrying Cost (EOQ / 2 x C) (7300 kgs / 2 x ₹13.88)		= ₹ 50,662
Total Inventory Cost		₹ 14,96,462

Advice: As total inventory cost at offer price is ₹ 27,340 (14,96,462 – 14,69,122) higher, offer should not be accepted.

(i) **Counter-offer:**

Let Discount Rate = z%

Counter-Offer Price = ₹ 100 – z% = ₹ 100 – z

Revised Carrying Cost = [(₹ 100 – z) x 1% x 12 months] + ₹ 2 = ₹ 12 -0.12z + ₹ 2

= ₹ 14 – 0.12z

Total Inventory Cost at Counter-Offer Price

Cost of Materials (A x Purchase Price) [14600 kgs x (₹ 100 – z)] = ₹ 14,60,000 – 14,600z

Total Ordering Cost (No. of Orders x O) (2 Orders x 200) = ₹ 400

Total Carrying Cost (EOQ / 2 x C) [7300 kgs / 2 x (₹ 14 – 0.12z)] = ₹ 51,100 – 438z

Total Inventory Cost ₹ 15,11,500 – 15038z

₹ 14,69,122 = ₹ 15,11,500 – 15038z

Or 15038z = 42,378

Or z = 2.82

Therefore, discount should be at least 2.82% in offer price.

Question 34 — LDR

A Limited has furnished the following information for the months from 1st January to 30th April, 2023:

	January	February	March	April
Number of Working days	25	24	26	25
Production (in units) per working day	50	55	60	52
Raw Material Purchases (% by weights to total of 4 months)	21%	26%	30%	23%
Purchase price of raw material (per kg)	₹ 10	₹ 12	₹ 13	₹ 11

Quantity of raw material per unit of product: 4 kg.

Opening stock of raw material on 1st January: 6,020 kg. (Cost ₹ 63,210)

Closing stock of raw material on 30th April: 5,100 kg.

All the purchases of material are made at the start of each month.

Required:

(i) Calculate the consumption of raw materials (in kgs) month-by- month and in total.

(ii) Calculate the month-wise quantity and value of raw materials purchased.

(iii) Prepare the priced stores ledger for each month using the FIFO method. ***(PYP 10 Marks, May'23)***

Answer 34

i) **Calculation of consumption of Raw Material (in kgs) month by month and total**

Particulars	Jan	Feb	March	April	Total
No. of working days	25	24	26	25	-
Production (Per day)	50	55	60	52	-
Production	1,250	1,320	1,560	1,300	5,430
Raw Material Consumed (in kgs)	**5,000**	**5,280**	**6,240**	**5,200**	21,720

Calculation of Raw Material Purchased

Purchased	**(Kg)**
Closing stock on 30th April	5,100
Add: Raw Material consumed	21,720
Less: Opening stock on 1st January	(6,020)
Raw Material purchased	20,800

ii) **Calculation of month wise quantity and value of raw material purchased**

	%	Purchased (Kg)	Price (₹)	Value (₹)
January	21	4,368	10	43,680
February	26	5,408	12	64,896
March	30	6,240	13	81,120
April	23	4,784	11	52,624
Total		20,800		2,42,320

iii) **Store Price Ledger by using FIFO method.**

Months	Particulars	Receipts			Issue			Balance		
		Qty	Rate	Amount (₹)	Qty	Rate	Amount (₹)	Qty	Rate	Amount (₹)
Jan	Opening							6,020	10.5	63,210
	Purchases	4,368	10	43,680				6,020	10.5	63,210
								4,368	10	43,680
					5,000	**10.5**	**52,500**	**1,020**	**10.5**	**10,710**
								4,368	**10**	**43,680**
Feb	Purchases	5,408	12	64,896				1,020	10.5	10,710
								4,368	10	43,680
								5,408	12	64,896
	Consumption				**1,020**	**10.5**	**10,710**	**108**	**10**	**1,080**
					4,260	**10**	**42,600**	**5,408**	**12**	**64,896**
March	Purchase	6,240	13	81,120				108	10	1,080
								5,408	12	64,896
								6,240	13	81,120
	Consumption				**108**	**10**	**1,080**			
					5,408	**12**	**64,896**			
					724	**13**	**9,412**	**5,516**	**13**	**71,708**
April	Purchase	4,784	11	52,624				5,516	13	71,708
								4,784	11	52,624
	Consumption				**5,200**	**13**	**67,600**	**316**	**13**	**4,108**
								4,784	**11**	**52,624**
										56,732

EXAM INSIGHTS: This numerical question was based on Material Costing. Many examinees find difficulty in the calculation of month-wise quantity purchased hence, they could not be to complete the priced store ledger correctly. The overall performance of the examinees was **average**.

Question 35

LDR

A Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will able to sale 20,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

(i) **The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).**

(ii) **Maximum consumption per day is 20 kg. more than the average consumption per day.**

(iii) **There is an opening stock of 2,000 kg.**

(iv) **Time required to get the raw materials from the suppliers is 4 to 8 days.**

(v) **The purchase price is Rs.125 per kg.**

There is an opening stock of 1,800 units of the finished product Exe.

The rate of interest charged by bank on Cash Credit facility is 13.76%.

To place an order company has to incur Rs. 720 on paper and documentation work.

From the above information COMPUTE the followings in relation to raw material Dee:

(a) Re-order Quantity

(b) Maximum Stock level

(c) Minimum Stock level

(d) Impact on the profitability of the company by not ordering the EOQ.

[Take 364 days for a year] ***(MTP Apr'19, 10 Marks ,RTP May'19) (Same concept different figures RTP May'21)***

Answer 35

Working Notes:

(i) Computation of Annual consumption & Annual Demand for raw material 'Dee':

Sales forecast of the product 'Exe'	20,000 units
Less: Opening stock of 'Exe'	1,800 units
Fresh units of 'Exe' to be produced	18,200 units
Raw material required to produce 18,200 units of 'Exe' (18,200 units × 2 kg.)	36,400 kg.
Less: Opening Stock of 'Dee'	2,000 kg.
Annual demand for raw material 'Dee'	34,400 kg.

(ii) Computation of Economic Order Quantity (EOQ):

$$EOQ = \frac{\sqrt{2\ X\ Annual\ Demand\ of\ 'Dee' \times Orderingcost}}{Carrying\ Cost\ Per\ Unit\ Per\ annum}$$

$$= \sqrt{\frac{2X34{,}400\ kg.X\ Rs.720}{Rs.125\ X\ 13.76\%}} = \frac{\sqrt{2x34{,}400kg.X\ Rs.720}}{Rs.17.2} = 1{,}697\ kg.$$

(iii) Re- Order level:

= (Maximum consumption per day × Maximum lead time)

$$= \left\{\left(\frac{Annual\ Consumption\ of\ 'Dee'}{364\ Days} + 20kg.\right) X\ 8\ days\right\}$$

$$= \left\{\left(\frac{36.400kg.}{364\ Days} + 20kg.\right) X\ 8\ days\right\} = 960kg.$$

(iv) Minimum consumption per day of raw material 'Dee':

Average Consumption per day = 100kg.

Hence, Maximum Consumption per day = 100 kg. + 20 kg. = 120 kg.

So, Minimum consumption per day will be

$$\text{Average Consumption} = \frac{\text{Min.consumption + Max.consumption}}{2}$$

$$\text{Or, 100 kg.} = \frac{\text{Min.consumption + 120kg.}}{2}$$

Or, Min. consumption = 200 kg – 120 kg. = 80 kg.

(a) Re-order Quantity:

EOQ – 200 kg. = 1,697 kg. – 200 kg. = 1,497 kg.

(b) Maximum Stock level:

= Re-order level + Re-order Quantity – (Min. consumption per day × Min. lead time)

= 960 kg. + 1,497 kg. – (80 kg. × 4 days)

= 2,457 kg. – 320 kg. = 2,137 kg.

(c) Minimum Stock level:

= Re-order level – (Average consumption per day × Average lead time)

= 960 kg. – (100 kg. × 6 days) = 360 kg.

(d) Impact on the profitability of the company by not ordering the EOQ.

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,497 kg.	1,697 kg.
II	No. of orders a year	34,400kg. /1,497kg. = 22.9or 23orders	34,400 kg. /1,697kg. = 20.27or 21orders
III	Ordering Cost	23 orders × Rs. 720 = Rs.16,560	21 orders × Rs. 720 = Rs.15,120
IV	Average Inventory	1,497kg. /2 = 748.5kg.	1,697kg. /2 = 848.5kg.
V	Carrying Cost	748.5 kg. × Rs. 17.2 = Rs.12,874.2	848.5 kg. × Rs. 17.2 = Rs.14,594.2
VI	Total Cost	Rs. 29,434.20	Rs. 29,714.20

Cost saved by not ordering EOQ = Rs. 29,714.20 - Rs. 29,434.20 = Rs. 280.

Question 36

Ani Ltd. uses 6 kg. of Material 'EXE' to produce 1 finished unit of Product 'EME'. The current demand of Product 'EME' is 16,000 units quarterly. 1 kg. of Material 'EXE' costs ₹ 40. The cost relating to quotations, documentation works, employee cost directly attributable to the procurement of material, every-time the order is made, is ₹ 2,000. The cost of fund invested in inventories, cost of storage, insurance cost, etc. is estimated to be 15% per annum of average inventory.

You are required the following:

(i) CALCULATE the Economic Order Quantity for Material 'EXE'.

(ii) COMMENT, should Ani Ltd. accept an offer of 2.5% discount by the supplier of Material 'EXE', if supply of the annual requirement of the Material is made in 4 equal installments? *(RTP Jan'25)*

Answer 36

Annual demand of material 'EXE'

= 16,000 units (per quarter) x 4 (No. of Quarter in a year) x 6 kg. (forevery finished product)

= 3,84,000 kg.

(i) Calculation of Economic Order Quantity (EOQ) for material 'EXE'

$$EOQ = \sqrt{\frac{2 \times \text{Annual demand} \times \text{orderingcost}}{\text{Carring cost per unit per annum}}}$$

$$= \sqrt{\frac{2 \times 3.84{,}000\ \text{kg} \times ₹\ 2{,}000}{₹\ 40 \times 15\%}} = 16{,}000\ \text{kg.}$$

(ii) Evaluation of Cost under different options of 'order quantity'.

Particulars	When EOQ is ordered	When discount of2.5% is accepted andsupply is in 4 equal installments
Order size	16,000 kg.	96,000 kg. $\frac{3{,}84{,}000\ \text{kg}}{4}$
No. of orders	24 $= \frac{3{,}84{,}000\ \text{kg}}{16{,}000\ \text{kg.}}$	4
Purchase Costper kg.	₹40	₹39 {₹ 40 - (₹ 40 × 2.5%)}
Total PurchaseCost (A)	₹1,53,60,000 (3,84,000 kg. x ₹40)	₹1,49,76,000 (3,84,000 kg. x ₹39)

Ordering Cost(B)	₹48,000 (24 orders x ₹2,000)	₹ 8,000 (4 orders x ₹2,000)
Carrying Cost(C)	₹48,000 $= \frac{16,000\ kg.}{2} \times 15\% \times ₹40$	₹2,80,800 $= \frac{96,000\ kg.}{2} \times 15\% \times ₹39$
Total Cost (A +B + C)	**₹ 1,54,56,000**	**₹ 1,52,64,800**

COMMENT – The total cost is lower if Ani Ltd. accept an offer of 2.5% discount by the supplier, when supply of the annual requirement of material 'EXE' is made in 4 equal installments.

Question 37

Following information is extracted from the purchase department of A Ltd.:

(i) Number of units to be purchased during the year is 10,000
(ii) Cost of placing a purchase order is ₹ 40
(iii) Purchase price per unit is ₹ 80
(iv) Insurance charges to be paid for protecting goods during transit is ₹ 20 per unit
(v) Cash discount to be received is 2%
(vi) Annual cost of storage per unit is ₹ 5
(vii) Details of lead time:
Average- 20 days
Maximum- 30 days
Minimum- 10 days
For emergency purchases- 8 days.
(viii) Rate of consumption:
Average- 30 units per day
Maximum- 40 units per day.
From the information given above, you are required to CALCULATE:
(i) Re-ordering level
(ii) Maximum level
(iii) Minimum level
(iv) Danger level. (MTP 6 Marks Nov'24)

Answer 37

Basic Data:

A	(Number of units to be purchased annually)	= 10,000 units
O	(Ordering cost per order)	= ₹40
C	(Annual cost of storage per unit)	= ₹5
	Purchase price per unit	= ₹80 + ₹20 (Insurance charges)
		= ₹100

(Note: Cash discount is treated as an interest and finance item andthus, it is ignored.)

Computations:

(i) Re-ordering level (ROL) = Maximum usage per period × Maximum lead time
= 40 units per day × 30 days
= **1,200 units**

(ii) Maximum level = ROL + ROQ – [Min. rate of consumption × Min. lead time]
(Referto working notes 1 and 2)
= 1200 units + 400 units – [20 units perday × 10 days]
= **1,400 units**

(iii) Minimum level = ROL – [Average rate of consumption × Average re-order-period]
= 1,200 units – (30 units per day × 20days)
= **600 units**

(iv) Danger level = Average consumption × Lead time for emergency purchases
= 30 units per day × 8 days
= **240 units**

Working Notes:

1. Minimum rate of consumption per day (X)

Av. Rate of consumption = $\frac{Minimum\ rate\ of\ consumption + Maximum\ rate\ of\ consumtion}{2}$

30 Units per day $= \frac{X\frac{units}{day} + 40\ units\ per\ day}{2}$

Or, X = 20 units per day.

2. Re-order quantity (ROQ) or Economic order Quantity (EOQ)

$= \sqrt{\frac{2x10{,}000\ unit\ x\ Rs.40}{Rs.5}}$

= 400 Units

Question 38

Following information is available from the purchase books of a company:

Cost of placing a purchase order	**₹ 10,000**
Number of units to be purchased during the year	**12,50,000**
Purchase price per unit	**₹ 125**
Annual cost of storage per unit	**₹ 62.50**

Details of lead time:

Maximum	**20 days**
Minimum	**10 days**
Average	**15 days**
Emergency	**3 days**

Rate of consumption:

Average	**1,500 units per day**
Maximum	**2,000 units per day**

From the details given above, you are required to CALCULATE:

(i) Re-ordering level
(ii) Maximum level
(iii) Minimum level
(iv) Danger level (MTP 6 Marks Dec'24)

Answer 38

(i) Re-ordering level (ROL) = Maximum usage per period × Maximum lead time
= 2,000 units per day × 20 days
= 40,000 units

(ii) Maximum level = ROL+ROQ–[Min. rate of consumption × Min. lead time]
(Refer to working notes 1 and 2)
= 40,000 units + 20,000 units – [1,000 units per day x 10 days]
= 50,000 units

(iii) Minimum level = ROL – Average rate of consumption × Average re-order-period
= 40,000 units – (1,500 units per day × 15 days)
= 17,500 units

(iv) Danger level = Average consumption × Lead time for emergency purchases
= 1,500 units per day × 3 days
= 4,500 units

Working Notes:

1. Minimum rate of consumption per day

Average rate of consumption = $\left(\frac{\text{Minimum rate of consumption+Maximum rate of consumption}}{2}\right)$

1,500 units per day = $\left(\frac{\text{X units per day+2.000 unit per day}}{2}\right)$

Or, X = 1,000 unit per day

2. Re-order Quantity (ROQ) = $\sqrt{\frac{2 \times 12{,}50{,}000\ Units \times ₹10{,}000}{62.50}}$

= 20,000 units

Multiple Choice Questions (MCQ)

1. **Direct material can be classified as *(SM)***
   (a) Fixed cost
   (b) Variable cost
   (c) Semi-variable cost.
   (d) Prime Cost

Ans: (b)

2. **In most of the industries, the most important element of cost is *(SM)***
   (a) Material
   (b) Labour
   (c) Overheads
   (d) Administration Cost

Ans: (a)

3. **Which of the following is considered to be the normal loss of materials? *(SM)***
   (a) Loss due to accidents
   (b) Pilferage
   (c) Loss due to breaking the bulk
   (d) Loss due to careless handling of materials.

Ans: (c)

4. **In which of following methods of pricing, costs lag behind the current economic values? *(SM)***
   (a) Last-in-first out price
   (b) First-in-first out price
   (c) Replacement price
   (d) Weighted average price

Ans: (b)

5. **Continuous stock taking is a part of *(SM)***
   (a) Annual stock taking
   (b) Perpetual inventory
   (c) ABC analysis.
   (d) Bin Cards

Ans: (b)

6. **In which of the following methods, issues of materials are priced at pre- determined rate? *(SM)***
   (a) Inflated price method
   (b) Standard price method
   (c) Replacement price method
   (d) Market price method.

Ans: (b)

7. **When material prices fluctuate widely, the method of pricing that gives absurd results is *(SM)***
   (a) Simple average price
   (b) Weighted average price
   (c) Moving average price
   (d) Inflated price.

Ans: (a)

8. **When prices fluctuate widely, the method that will smooth out the effect of fluctuations is *(SM)***
   (a) Simple average
   (b) Weighted average
   (c) FIFO
   (d) LIFO

Ans: (b)

9. **Under the FSN system of inventory control, inventory is classified on the basis of: *(SM)***
   (a) Volume of material consumption
   (b) Frequency of usage of items of inventory
   (c) Criticality of the item of inventory for production
   (d) Value of items of inventory

Ans: (b)

10. **Form used for making a formal request to the purchasing department to purchase materials is a - *(SM)***
   (a) Material Transfer Note
   (b) Purchase Requisition Note
   (c) Bill of Materials
   (d) Material Requisition Note

Ans: (b)

11. **1200 Kg of a material were input to a process in a period. The normal loss is8% of input There is no opening or closing work-in-progress. Output in the period was1100 Kg. What was the abnormal gain/loss in the period? *(MTP 2 Marks Aug'24)***
   (a) Abnormal gain of 12 Kg
   (b) Abnormal loss of 12 kg
   (c) Abnormal gain of 108 Kg
   (d) Abnormal loss of 4 kg

Ans: (d)

12. **In the automotive machine manufacturing sector, a component is manufactured. The Economic Order Quantity (EOQ) for the component is 1,500 units. The cost of placing an order is ₹ 100, and the carrying cost per annum is 10%. The cost per unit of component is ₹ 20.**
   Calculate the annual demand for this specific automative component. *(PYP 2 Marks Sep'24)*
   (A) 45,500 units
   (B) 75,000 units
   (C) 36,000 units
   (D) 22,500 units

Ans: (d)

CHAPTER 3: EMPLOYEE COST AND DIRECT EXPENSES

CONCEPTS OF THIS CHAPTER

- Employee cost: meaning and importance.
- Attendance and payroll procedures.
- Idle time and overtime: meaning, treatment.
- Employee turnover: meaning, reasons, measurement, cost impact.
- Remuneration and incentive methods: wages, bonus calculation.
- Efficiency rating procedures.
- Direct expenses: measurement and treatment.

LDR Questions

Q 8 Q 26
Q 29 Q 34

QUICK REVIEW OF IMPORTANT CONCEPTS

I. IDLE TIME

The time during which no production is carried-out because the worker remains idle but are paid.

i. Normal idle time | ii. Abnormal idle time

(i) Normal Idle Time: Time which cannot be avoided or reduced in the normal course of business.

- **Causes:**

– Time lost between factory gate and the place of work, | – Interval between our job and another,
– Setting up time for the machine | – Normal rest time, break for lunch etc.

- **Treatment of Normal Idle Time**
  - Treated at a **part of cost of production**.
  - In the cate of **direct workers** an allowance for normal idle time it considered while **setting of standard hours** or Standard rate.
  - In case of **indirect workers**, normal idle time is considered for the **computation of overhead rate**

(ii) Abnormal Idle Time: Apart from normal idle time, there may be factors which give rise to abnormal idle time.

- **Causes:**

– Lack of coordination, | – Fewer failure, Breakdown of machines,
– Non-availability of raw materials, | – Strikes, lockouts, poor supervision, are, mood etc.

II. OVERTIME:

Overtime is the work done beyond normal working hours.
Overtime Payment = Wages paid for overtime at normal rate +Fermium (extra) payment for overtime word

III. SYSTEM OF WAGE PAYMENT

1. **Time based (Time Rate System):**
   Workers are paid on a time basis i.e. hour, day, week, or month.
   Wages = Time Worked (Hours/ Days/ Months) × Rate for the time

2. **Output Based (Piece Rate System):**
   Each operation, job or unit of production is termed a piece. A rate of payment is fixed for each piece.

The wages of the worker depend upon his output and rate of each unit of output.
Wages = Number of units produced × Rate per unit

3. **Premium Bonus Method:**

The worker is guaranteed his daily wages, if output is below and up to standard. In case the task is completed in less than the standard time, the saved time is shared between the employees and the employer.

(a) Halsey Premium Plan

- A standard time is fixed for each job or process
- Worker gets his time rate even if he exceeds the standard time limit, since his day rate is guaranteed.
- If job done in less than the standard time, bonus equal to 50 percent of the wages of time saved is paid.

Wages = Time taken × Time rate + 50% of time saved × Time rate

(b) Rowan Premium Plan

- Standard time allowance is fixed for performance of a job.
- Bonus is paid if time is saved.
- Bonus is that proportion of the time wages as time saved bears to the standard time.

$$\text{Time taken} \times \text{Rate per hour} + \frac{\textit{Time Saved}}{\textit{Time Allowed}} \times \text{Time taken} \times \text{Rate per hour} \times$$

IV. EMPLOYEE (LABOUR) TURNOVER

Employee turnover is the rate of change in the composition of employee force during a specified period measured against a suitable index.

Methods to calculate Employee Turnover		
Replacement Method	**Separation Method**	**Flux Method**
This considers actual replacement of employees irrespective of number of person leaving the organization	This considers total number of employees separated	This considers both the number of replacements at well at the number of separations

- Replacement method = $\frac{\text{Number of employees Replaced during the Period}}{\text{Average number of employees during the period on roll}} \times 100$

- Separation method = $\frac{\text{Number of employees seprated during the period}}{\text{Average number of employees during the period on roll}} \times 100$

- Flux method = $\frac{\text{Number of employees Seperated+Number of employees Replaced during the period}}{\text{Average Number of employees during the period on roll}} \times 100$

Or

$$\frac{\text{No.of seperation+No of Accestion(i.e.No of Replacement+No.of New joinings)}}{\text{Average number of employees during the period on roll}} \times 100$$

- Newly recruited employees are also responsible for changes in the composition or work force, some management accountants feel to take new recruitment for calculating employee turnover. The total number of workers joining, including replacements, is called accessions.

Questions & Answers

Theory Questions

Question 1

BRIEF OUT advantages and disadvantages of Halsey Premium Plan. ***(MTP 4 Marks Apr'22)***

Answer 1

Advantages	Disadvantages
1. Time rate is guaranteed while there is opportunity for increasing earnings by increasing production.	1. Incentive is not so strong as with piece rate system. In fact the harder the worker works, the lesser he gets per piece.
2. The system is equitable in as much as the employer gets a direct return for his efforts in improving production methods and providing better equipment.	2. The sharing principle may not be liked by employees.

Question 2

How would you account for idle capacity cost in Cost Accounting? ***(RTP Nov'23)***

Answer 2

Idle capacity costs are treated in the following ways in Cost Accounts:

(i) **If the idle capacity cost is due to unavoidable reasons:** A supplementary overhead rate may be used to recover the idle capacity cost. In this case, the costs are charged to the production capacity utilized.

(ii) **If the idle capacity cost is due to avoidable reasons:** Such as faulty planning, etc. the cost should be charged to Costing Profit and Loss Account.

(iii) **If the idle capacity cost is due to trade depression, etc.:** Being abnormal in nature the cost should also be charged to the Costing Profit and Loss Account.

(iv) **If the idle capacity cost is due to seasonal factors**, then the cost should be charged to cost of production by inflating overhead rate.

Question 3

Distinguish between cost allocation and cost absorption. ***(RTP Nov'23)***

Answer 3

Distinguish between Cost allocation and Cost absorption:

Cost allocation is the allotment of whole item of cost to a cost centre or a cost unit. In other words, it is the process of identifying, assigning or allowing cost to a cost centre or a cost unit.

Cost absorption is the process of absorbing all indirect costs or overhead costs allocated or apportioned over particular cost center or production department by the units produced.

Question 4

Discuss the steps involved in setting labour time standards. ***(PYP 5 Marks Dec'21)***

Answer 4

Procedure of Setting Labour Time Standards

The following are the steps involved in setting labour standards:

(a) **Standardization:** Products to be produced are decided based on production plan and customer's order.

(b) **Labour specification:** Types of labour and labour time is specified. Labour time specification is based on past records and it takes into account normal wastage of time.

(c) **Standardization of methods:** Selection of proper machines to use proper sequence and method of operations.

(d) **Manufacturing layout:** A plan of operation for each product listing the operations to be performed is prepared.

(e) **Time and motion study:** It is conducted for selecting the best way of completing the job or motions to be performed by workers and the standard time which an average worker will take for each job. This also takes into account the learning efficiency and learning effect.

(f) **Training and trial:** Workers are trained to do the work and time spent at the time of trial run is noted down.

EXAM INSIGHTS: This theory question to discuss steps involved in setting Labour Time Standards. Majority of the examinees were unable to answer it correct. Performance of the examinees was poor.

Question 5

Idle time is the time during which no production is carried-out because the worker remains idle but are paid. It can be normal or abnormal. LIST OUT some of the causes/examples of normal and abnormal idle time. ***(MTP 4 Marks Dec'24)***

Answer 5

Causes/examples of normal idle time:

1. The time lost between factory gate and the place of work.
2. The interval between one job and another.
3. The setting up time for the machine.
4. Normal rest time, **break for lunch etc.**

Causes/examples of bnormal idle time:

1. Lack of coordination.
2. Power failure, Breakdown of machines.
3. Non-availability of raw materials, strikes, lockouts, poor supervision, fire, flood etc.

Question 6

How does the high employee turnover increase the cost of production? Explain. ***(PYP 5 Marks, May'23)***

Answer 6

High Employee Turnover increases the cost of production

Replacement costs are the costs which arise due to employee turnover. If employees leave soon after they acquire the **necessary training and experience** of good work, additional costs will have to be incurred on new workers, **i.e., cost of recruitment, training and induction, abnormal breakage and scrap and extra wages and overheads due to the inefficiency** of new workers.

It is obvious that a company will incur very high replacement costs if the rate of employee turnover is high. Similarly, only adequate preventive costs can keep Employee turnover at a low level. Each company must, therefore, work out the optimum level of Employee turnover keeping in view its personnel policies and the behaviour of replacement cost and preventive costs at various levels of Employee turnover rates.

EXAM INSIGHTS: This theoretical question was based on how high employee turnover increases the cost of production and some examinees written answers related to high turnover, instead of high employee turnover. The overall performance of the examinees was average.

Question 7

STATE various causes of and treatment of Overtime Premium in Cost Accounting. ***(MTP 5 Marks Oct'22)***

Answer 7

Causes and Treatment of Overtime premium in cost accounting

Causes	Treatment
(1) The customer may agree to bear the entire charge of overtime because urgency of work.	(1) If overtime is resorted to at the desire of the customer, then overtime premium may be charged to the job directly.
(2) Overtime may be called for to make up any shortfall in production due to some unexpected development.	(2) If overtime is required to cope with general production programmes or for meeting urgent orders, the overtime premium should be treated as overhead cost of the particular department or cost center which works overtime.
(3) Overtime work may be necessary to make up a shortfall in production due to some fault of management.	(3) If overtime is worked in a department due to the fault of another department, the overtime premium should be charged to the latter department.
(4) Overtime work may be resorted to, to secure an out-turn in excess of the normal output to take advantage of an expanding market or of rising demand	(4) Overtime worked on account of abnormal conditions such as flood, earthquake etc., should not be charged to cost, but to Costing Profit and Loss Account.

Question 8 LDR

Explain the treatment of Overtime Premium in following situations:

(i) **SV & Co. wants to grab some special orders, and overtime is required to meet the same.**

(ii) **Dept. X has to work overtime to make up a shortfall in production due to some fault of management in dept. Y.**

(iii) **S Ltd. has to work overtime regularly throughout the year as a policy due to the workers' shortage.**

(iv) **Due to flood in Odisha, RS Ltd. has to work overtime to complete the job.**

(v) **A customer requested the company MN Ltd. to expedite the job because of his urgency of work.**

(PYP 5 Marks May'22)

Answer 8

Treatment of Overtime premium in different situations

Situation	Treatment
(i) SV & Co. wants to grab some special orders, and overtime is required to meet the same.	If overtime is required to cope with general production programmes or for meeting urgent orders, **the overtime premium should be treated as overhead cost of the particular department or cost centre which works overtime.**
(ii) Dept. X has to work overtime to make up a shortfall in production due to some fault of management in dept. Y.	If overtime is worked in a department due to the fault of another department, **the overtime premium should be charged to the latter department (Y).**
(iii) S Ltd. has to work overtime regularly throughout the year as a policy due to the workers' shortage.	The overtime premium is treated as a part of **employee cost and job is charged at an effective average wage rate.**
(iv) Due to flood in Odisha, RS Ltd. has to work overtime to complete the job.	Overtime worked on account of abnormal conditions such as flood, earthquake etc., should **not be charged to cost, but to Costing Profit and Loss Account.**
(v) A customer requested the company MN Ltd. to expedite the job because of his urgency of work.	Where overtime is worked at the request of the customer, overtime premium is also **charged to the job/ customer directly.**

EXAM INSIGHTS: This theory question tested the treatment of overtime premium in the given situations. Majority of the examinees were unable to answer it correctly. Performance of the examinees was below average.

Question 9

What do you mean by employee productivity? Point out the factors which must be taken into consideration for increasing employee productivity. *(PYP 5 Marks Nov'23)*

Answer 9

Meaning of employee productivity

Productivity is generally determined by the input/output ratio.

In case of employees, it is calculated as: $\frac{Standard\ time\ for\ doing\ actual\ work}{actual\ time\ taken}$

Employee productivity is used for measuring the efficiency of individual workers. It is an index of efficiency in the utilisation of human resources, materials, capital, power and all kinds of services and facilities.

It is measured by the output in relation to input. Productivity can be improved by reducing the input for a certain quantity or value of output or by increasing the output from the same given quantity or value of input.

Factors for increasing Employee productivity: The important factors which must be taken into consideration for increasing employee productivity are as follows:

1. Employing only those workers who possess the right type of skill.
2. Placing a right type of person to a right job.
3. Training young and old workers by providing them the right types of opportunities.
4. Taking appropriate measures to avoid the situation of excess or shortage of employees.
5. Carrying out work study for fixation of wages and for the simplification and standardization of work.

EXAM INSIGHTS: Theory question requiring examinees to explain the meaning of Employee Productivity and point out factors which must be taken into consideration for increasing employee productivity. Most of the examinees did not answer properly and the performance of the examinees was **poor**.

Question 10

EXPLAIN the efficiency rating procedures of the employees. *(MTP 5 Marks July'24)*

Answer 10

Efficiency is usually related with performance and may be computed by comparing the time taken with the standard time allotted to perform the given job/task.

If the time taken by a worker on a job equals or less than thestandard time, then he is rated efficient.

In case he takes more time than the standard time he is rated as inefficient.

$$\text{Efficiency in \%} = \frac{\text{Time allowed as per standard}}{Time\ taken} \times 100$$

For efficiency rating of employees, the following procedures may be followed:

1. **Determining standard time/performance standards:** The first step is to determine the standard time taken by a worker for performing a particular job/task. The standard time can be determined by using Time & Motion study or Work study techniques. While determining the standard time for a job/task a heterogeneous group of workers is taken and contingency allowances are added for determining standard time.
2. **Measuring Actual Performance of workers:** For computing efficiency rating it is necessary to develop a procedure for recording the actual performance of workers. The system developed should record the output of each worker along with the time taken by him.
3. **Computation of efficiency rating:** The efficiency rating of each worker can be computed by using the above mentioned Formula.

Practical Questions

Question 11

A skilled worker is paid a guaranteed wage rate of ₹ 120 per hour. The standard time allowed for a job is 6 hour. He took 5 hours to complete the job. He is paid wages under Rowan Incentive Plan.

(i) Calculate his effective hourly rate of earnings under Rowan Incentive Plan.

(ii) If the worker is placed under Halsey Incentive Scheme (50%) and he wants to maintain the same effective hourly rate of earnings, calculate the time in which he should complete the job. ***(RTP Nov'23)***

Answer 11

(i) Effective hourly rate of earnings under Rowan Incentive Plan

Earnings under Rowan Incentive plan =

$$\text{(Actual time taken X wage rate)} + \frac{\text{Time saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Wage rate}$$

$$= (5 \text{ hours X Rs. } 120) + \left(\frac{1 \text{ hour}}{6 \text{ hours}} \times 5 \text{ hours} \times \text{Rs. } 120\right)$$

= Rs. 600 +Rs. 100 = Rs. 700

Effective hourly rate = ₹ 700/5 hours = ₹ 140 /hour

(ii) Let time taken = X

$$\therefore \text{Effective hourly rate} = \frac{\text{Earnings under Halsay Scheme}}{\text{Time taken}}$$

Or, Effective hourly rate under Halsey Incentive plan =

$$\frac{(\text{Time taken} \times \text{Rate}) + 50\% \text{ of Rate} \times (\text{Time allowed} - \text{Time taken})}{\text{Time taken}}$$

$$\text{Or, Rs.140} = \frac{(X \times \text{Rs.120}) + 50\% \text{ of Rs.120} \times (6 - X)}{X}$$

Or, 140X = 120X + 360 – 60X

Or, 80X = 360

Or, $X = \frac{360}{80} = 4.5$ hours

Therefore, to earn effective hourly rate of ₹140 under Halsey Incentive Scheme worker has to complete the work in 4.5 hours.

Question 12

Rowan Premium Bonus system does not motivate a highly efficient worker as a less efficient worker and a highly efficient worker can obtain same bonus under this system. Discuss with an example.
(PYP 5 Marks Jul'21)

Answer 12

Rowan Premium Plan: According to this system a standard time allowance is fixed for the performance of a job and bonus is paid if time is saved.

Under Rowan System, the bonus is that proportion of the time wages as time saved bears to the standard time.

$$\text{Bonus} = \frac{Time\ taken}{Time\ allowed} \times Time\ Saved \times hourly\ rate$$

Example explaining highly efficient worker and less efficient worker obtaining same bonus:

Time rate (per Hour)	₹ 60
Time allowed	8 hours.
Time taken by 'X'	6 hours.
Time taken by 'Y'	2 hours.

Bonus $= \frac{Time\ taken}{Time\ allowed} \times Time\ Saved \times hourly\ rate$

For 'X' $= \frac{2\ hours}{8\ hours} \times 6\ hours \times Rs.60$ **= Rs. 90**

For 'Y' $= \frac{6\ hours}{8\ hours} \times 2\ hours \times Rs.60$ **= Rs. 90**

From the above example, it can be concluded that a highly efficient worker may obtain same bonus as less efficient worker under this system.

EXAM INSIGHTS: It was a theoretical question on Rowan Premium Bonus Plan testing the knowledge of the examinees that in what situation efficient and less efficient workers will get the same bonus. Majority of examinees did not answer properly. Performance of the examinees was below average.

Question 13

A skilled worker is paid a guaranteed wage rate of ₹ 150 per hour. The standard time allowed for a job is 10 hours. He took 8 hours to complete the job. He has been paid the wages under Rowan Incentive Plan.
You are required to:

(i) Calculate an effective hourly rate of earnings under Rowan Incentive Plan.

(ii) Calculate the time in which he should complete the job, if the worker is placed under Halsey Incentive Scheme (50%) and he wants to maintain the same effective hourly rate of earnings.
(PYP 5 Marks Dec'21)

Answer 13

(i) Calculation of Effective hourly rate of earnings under Rowan Incentive Plan:

Standard time allowed = 10 hours

Time taken = 8 hours; Time saved = 2 hours

	Particulars	Amount (₹)
A	Basic guaranteed wages (₹150 × 8 hours)	1,200
B	Add: Bonus for time saved (2 /10 × 8 × ₹ 150)	240
C	Total earnings (A+B)	1,440
D	Hours worked	8 hours
E	Effective hourly rate (C÷D)	180

(ii) Let the time taken to complete the job is "T" and the time saved is 10-T

Effective hourly rate under the Halsey Incentive scheme

$$= \frac{(Rate \times Hours\ Worked)+(Rate \times 50\%\ of\ Time\ Saved)}{Hours\ Worked} = ₹\ 180$$

$$\frac{(Rs.150 \times T)+Rs.150 \times 50\%\ (10-T)}{T} = \text{Rs. } 180$$

$150T + 750 - 75T = 180T$

$180T - 75T = 750$

$T = \frac{750}{105} = 7.14$ hours

EXAM INSIGHTS: This Numerical question tested the conceptual knowledge of examinees under Rowan incentive plan for the calculation of effective hourly rates. On the basis of calculated effective hourly rate, examinees had to calculate time required to complete job under Halsey incentive scheme. Most of the examinees did will in the first part but failed to equate with the effective hourly rate in the second part of the question. The performance was above average.

Question 14

A skilled worker in Shanu Ltd. is paid a guaranteed wage rate of ₹ 30 per hour. The standard time per unit for a particular product is 4 hours. Sam, a machine-man, has been paid wages under the Rowan Incentive Plan and he had earned an effective hourly rate of ₹ 37.50 on the manufacture of that particular product. What could have been his total earnings and effective hourly rate, had he been put on Halsey Incentive Scheme (50%)? *(MTP 4 Marks Apr'24,SM)*

Answer 14

Let T hours be the total time worked in hours by the skilled worker (machine-man Sam); ₹ 30/- is the rate per hour; standard time is 4 hours per unit and effective hourly earning rate is ₹ 37.50 then

Earning = Hours worked × Rate per hour + $\frac{\text{Time saved}}{\text{Time allowed}}$ × Time taken × Rate per hour

(Under Rowan incentive plan)

₹ 37.5 T = (T × ₹ 30) + (T × ₹ 30) + $\frac{(4-T)}{4}$ × T × ₹30

₹ 37.5= ₹ 30 + (4 – T) × ₹ 7.5

Or ₹ 7.5 T = ₹ 22.5

Or T= 3 hours

Total earnings and effective hourly rate of skilled worker (machine man Sam) under Halsey Incentive Scheme (50%)

Total earnings = (Hours worked × Rate per hour) + (1/2 Time saved × Rate per hour)

(under 50% Halsey Incentive Scheme)

= (3 hours × ₹ 30) + (½ × 1 hour × ₹ 30)

Effective hourly rate = $\frac{\text{Total earnings}}{\text{Hours taken}} = \frac{₹\ 105}{3\ \text{Hours}}$ = ₹ 35

Question 15

The management of a company wants to formulate an incentive plan for the workers with a view to increase productivity. The following particulars have been extracted from the books of company:

Piece Wage rate	**₹ 10**
Weekly working hours	**40**
Hourly wages rate	**₹ 40 (guaranteed)**
Standard/normal time per unit	**15 minutes.**

Actual output for a week:

Worker A:	**176 pieces**
Worker B:	**140 pieces**

Under Halsey scheme, worker gets a bonus equal to 50% of Wages of time saved.

CALCULATE earning of workers under Halsey's and Rowan's premium scheme. ***(MTP 4 Marks Nov'24)***

Answer 15

Calculation of earnings for workers under different incentiveplans:

Halsey's Premium Plan:

	Worker – A	Worker – B
Actual time taken	40 hours	40 hours
Standard time for actual Production	44 hours $(\frac{176\ pcs \times 15\ min.}{60\ Min})$	35 hours $(\frac{140\ pcs \times 15\ min.}{60\ Min})$
Minimum Wages	₹1,600 (40 hours x ₹40)	₹1,600 (40 hours x ₹40)
Bonus	₹80 {50% (44-40) x ₹40}	No bonus
Earning	₹1,680	₹1,600
Rowan's Premium Plan:		
Minimum Wages (as above)	₹1,600	₹1,600
Bonus	= ₹145.45 $(\frac{4\ Hours}{44\ hours} \times 40\ Hours \times ₹\ 40)$	No bonus
Earning	₹1,745.45	₹1,600

Question 16

Anirban Ltd. wants to ascertain the profit lost during the year 20X8-X9 due to increased labour turnover. For this purpose, they have given you the following information:

(1) Training period of the new recruits is 50,000 hours. During this period their productivity is 60% of the experienced workers. Time required by an experienced worker is 10 hours per unit.

(2) 20% of the output during training period was defective. Cost of rectification of a defective unit was Rs. 25.
(3) Potential productive hours lost due to delay in recruitment were 1,00,000 hours.
(4) Selling price per unit is Rs.180 and P/V ratio is 20%.
(5) Settlement cost of the workers leaving the organization was Rs.1,83,480.
(6) Recruitment cost was Rs.1,56,340
(7) Training cost was Rs.1,13,180.

You are required to CALCULATE the profit lost by the company due to increased labour turnover during the year 20X8-X9. ***(MTP 5 Marks, Apr'19 & Sep'23, RTP May'18)***

Answer 16

Output by experienced workers in 50,000 hours = $\frac{50,000}{10}$ = 5,000 units

∴ Output by new recruits = 60% of 5,000 = 3,000 units

Less of output = 5,000 – 3,000 = 2,000 units

Total loss of output = 10,000 + 2,000 = 12,000 units

Contribution per unit = 20% of 180 = Rs. 36

Total contribution cost = 36 × 12,000 = Rs. 4,32,000

Cost of repairing defective units = 3,000 × 0.2 × 25 = Rs. 15,000

Profit forgone due to labour turnover

	(Rs.)
Loss of Contribution	4,32,000
Cost of repairing defective units	15,000
Recruitment cost	1,56,340
Training cost	1,13,180
Settlement cost of workers leaving	1,83,480
Profit forgone in 20X8-X9	9,00,000

Question 17

Vivit Su Company Ltd. has computed labour turnover rates for the quarter ended 31st March, 2017 as 20%, 10% and 5% under flux method, replacement method and separation method respectively. If the number of workers replaced during that quarter is 50.

Calculate:

(i) Workers recruited and joined
(ii) Workers left and discharged and
(iii) Average number of workers on roll.

(MTP Oct'18, 5 Marks) (Same concept different figures MTP 5 Marks Mar'21, MTP 5 Marks Oct'22)

Answer 17

Labour Turnover Rate (Replacement Method) = $\frac{\text{No.of Workers replaced}}{\text{Average no.of workers}} \times 100$

Or, $\frac{10}{100} = \frac{50}{\text{Average no.of workers}}$

Thus, Average No. of workers = 500

Labour Turnover Rate (Separation Method) = $\frac{\text{No.of workers replaced}}{\text{Average no.of workers}} \times 100$

Or, $\frac{5}{100} = \frac{\text{Number of workers separated}}{50}$

Thus, No. of workers separated =25

Labour Turnover Rate (Flux Method)

$= \frac{\text{No. of Separations+No.of Accession (Joinings)}}{\text{Average no.of workers}} \times 100$

Or, $= \frac{20}{100} = \frac{25+\text{No.of accessions (joinings)}}{500}$

Or, 100(25+No.of Accessions) = 10,000

Or, 25+No. of Accessions = 100

Thus, No. of Accessions = 100-25=75

Accordingly,

(i) Workers recruited and Joined = 75

(ii) Workers left and discharged = 25

(iii) Average number of workers on roll = 500

Question 18

From the following information, CALCULATE employee turnover rate using – (i) Separation Method, (ii) Replacement Method, (iii) New Recruitment Method, and (iv) Flux Method:

No. of workers as on 01.04.2020 = 3,800 No. of workers as on 31.03.2021 = 4,200

During the year, 40 workers left while 160 workers were discharged and 600 workers were recruited during the year; of these, 150 workers were recruited because of exits and the rest were recruited in accordance with expansion plans. ***(MTP 5 Marks, Apr'21, RTP May 23)***

(Same concept but different figures as RTP May'20, PYP 10 Marks May'18)

Answer 18

Employee turnover rate using:

(i) Separation Method:

$$= \frac{\text{No.of workers left+no.of workers discharge}}{\text{Average no.of workers}} \times 100$$

$$= \frac{40+160}{(3800+4200)/2} \times 100 = \frac{200}{4000} \times 100 = 5\%$$

(ii) Replacement method

$$= \frac{\text{No.of workers replced}}{\text{average no.of workers}} \times 100 = \frac{150}{4000} \times 100 = 3.75\%$$

(iii) New recruitment method

$$= \frac{\text{No.of workers newly recruted}}{\text{average no.of workers}} \times 100$$

$$= \frac{\text{No.of recruitments} - \text{no.of replacements}}{\text{Average no.of workers}} \times 100$$

$$= \frac{600-150}{4000} \times 100 = \frac{450}{4000} \times 100 = 11.25\%$$

(iv) Flux method:

$$= \frac{\text{No.of seperations+no.of accessions}}{\text{Average no.of workers}} \times 100$$

$$= \frac{(200+600)}{(3800+4200)/2} \times 100 = \frac{800}{4000} \times 100 = 20\%$$

Question 19

The standard time allowed for a certain piece of work is 240 hours. Normal wage rate is ₹ 75 per hour. The bonus system applicable to the work is as follows:

Percentage of time saved to time allowed (slab rate)	Bonus
(i) Up to the first 20% of time allowed	25% of the corresponding saving in time.
(ii) For and within the next 30% of time allowed	40% of the corresponding saving in time.
(iii) For and within the next 30% of time allowed	30% of the corresponding saving in time.
(iv) For and within the next 20% of time allowed	10% of the corresponding saving in time.

CALCULATE the total earnings of a worker over the piece of work and his earnings per hour when he takes-

(a) 256 hours,

(b) 120 hours, and

(c) 24 hours respectively. ***(MTP 10 Marks Mar'22)***

Answer 19

Calculation of total earnings and earnings per hour:

	Particulars	(a) Time taken is 256 hours	(b) Time taken is 120 hours	(c) Time taken is 24 hours
A.	Time Allowed	240 hours	240 hours	240 hours

B.	Time taken	256 hours	120 hours	24 hours
C.	Time Saved (A-B)	Nil	120 hours	216 hours
D.	Bonus hours (Refer workings)	Nil	40.80 hours	64.80 hours
E.	Hours to be paid (B+D)	256 hours	160.80 hours	88.80 hours
F.	Wages rate per hour	₹ 75	₹ 75	₹ 75
G.	**Total earnings (E×F)**	**₹ 19,200**	**₹ 12,060**	**₹ 6,660**
H.	**Earnings per hour (G÷B)**	**₹ 75**	**₹ 100.50**	**₹ 277.50**

Working Notes:

Calculation of bonus hours:

	Time saved 120 hours	Time saved 216 hours
For first 20% of time allowed i.e. 48 hours	12 (25% of 48 hours)	12 (25% of 48 hours)
For next 30% of time allowed i..e. 72 hours	28.80 (40% of 72 hours)	28.80 (40% of 72 hours)
For next 30% of time allowed i..e. 72 hours	-	21.60 (30% of 72 hours)
For next 20% of time allowed i..e. 48 hours	-	2.40 (10% of 24 hours)
Bonus hours	**40.80**	**64.80**

Question 20

The rate of change of labour force in a company during the year ending 31st March, 2023 was calculated as 13%,8% and 5% respectively under 'Flux Method', 'Replacement method' and 'Separation method'. The number of workers separated during the year is 40.

You are required to calculate:

(i) Average number of workers on roll.

(ii) Number of workers replaced during the year.

(iii) Number of new accessions i.e. new recruitment.

Number of workers at the beginning of the year. ***(MTP 5 Marks Oct'23)***

Answer 20

(i) Labour Turnover Rate (Separation Method)

$$= \frac{\text{No.of workers separated}}{\text{Average no.of workers on roll}}$$

Or, $\frac{5}{100} = \frac{40}{\text{Average no.of workers on roll}}$

Or, Average no. of workers on roll = 800

(ii) Labour Turnover Rate (Replacement method)

$$= \frac{\text{No.of workers replaced}}{\text{Average no.of workers on roll}}$$

Or, $\frac{8}{100} = \frac{\text{No.of workers replaced}}{800}$

Or, No. of workers replaced = 64

(iii) Labour Turnover Rate (Flux Method)

$$= \frac{\text{No.of Separations+No.of accessions (New recruitments)}}{\text{Average No.of workers on roll}}$$

Or, $\frac{13}{100} = \frac{40+\text{No.of accessions (New recruitments)}}{800}$

Or, 100 (40 + No. of Accessions) = 10,400

Or, No. of new accessions = 64

(iv) No. of workers at the beginning of the year

Let workers at the beginning of the year were 'X'

$$\text{Average no. of workers on roll} = \frac{\text{workers at the begining+workers at the end}}{2}$$

800	$= \frac{X+(X+\text{New accessions}-\text{Separations})}{2}$
800	$= \frac{X+(X+64-40)}{2}$
800	$= \frac{X+(X+24)}{2}$
2 X	= 1,600 – 24 or, X = 788 workers

Question 21

Following information is given of a newly setup organization for the year ended on 31st March, 2021.

Number of workers replaced during the period	50
Number of workers left and discharged during the period	25
Average number of workers on the roll during the period	500

You are required to:

(i) Compute the Employee Turnover Rates using Separation Method and Flux Method.

(ii) Equivalent Employee Turnover Rates for (i) above, given that the organization was setup on 31st January, 2021. ***(PYP 5 Marks Jul'21)***

Answer 21

(i) Employee Turnover rate:

Using Separation method:

$$= \frac{Number\ of\ employees\ Separated\ during\ the\ period}{Averange\ number\ of\ employees\ during\ the\ period\ on\ roll} \times 100$$

$= \frac{25}{500} \times 100$ **= 5%**

Using Flux method:

$$= \frac{Number\ of\ employees\ Separated + Number\ of\ employees\ Replaced\ During\ the\ Period}{Average\ number\ of\ employees\ during\ the\ period\ on\ roll} \times 100$$

$= \frac{50+25}{500} \times 100 = 15\%$

(ii) Equivalent Employee Turnover Rate:

$$= \frac{Employee\ Turn\ over\ rate\ for\ the\ period}{Number\ of\ Days\ in\ the\ period} \times 365$$

Using Separation method = 5/60 X 365 = 30.42%

Or, = 5/60 X 360 = 30%

Or, = 5/2 X 12 = 30%

Using Flux method = 15/60 × 365 = 91.25%

Or, = 15/60 X 360 = 30%

Or, 15/2 X 12 = 30%

EXAM INSIGHTS: It was a practical problem requiring computation of Employee turnover rates and Equivalent employee turnover rates by using separation method and flux method. Most of the examinees were not well acquainted with the concept of equivalent employee turnover rates. Performance of the examinees was below average.

Question 22

A skilled worker, in PK Ltd., is paid a guaranteed wage rate of ₹ 15.00 per hour in a 48- hour week. The standard time to produce a unit is 18 minutes. During a week, a skilled worker -Mr. 'A' has produced 200 units of the product. The Company has taken a drive for cost reduction and wants to reduce its labour cost.

You are required to:

(i) Calculate wages of Mr. 'A' under each of the following methods:

(A) Time rate,

(B) Piece -rete with a guaranteed weekly wage,

(C) Halsey Premium Plan

(D) Rowan Premium Plan

(ii) **Suggest which bonus plan i.e. Halsey Premium Plan or Rowan Premium Plan, the company should follow.** ***(PYP 6 Marks Nov'22)***

Answer 22

(i) **Calculation of wages of Mr. 'A' under different wage schemes:**

A. Time rate

Wages = Time Worked × Rate for the time
= 48 hours x ₹ 15
= ₹ 720

B. Piece rate with a guaranteed weekly wage

Wages = Number of units produced × Rate per unit
= 200 units x ₹ 4.50*
= ₹ 900
*(₹ 15 / 60 minutes) x 18 minutes = ₹ 4.50

C. Halsey Premium Plan

Wages = Time taken × Time rate + 50% of time saved × Time rate
Wages = Time taken × Time rate + 50% (Standard time − Actual time) × Time rate
= (48 hours x ₹ 15) + 50% of (60 hours# − 48 hours) x ₹ 15
= ₹ 720 + ₹ 90
= ₹ 810

(200 units x 18 minutes) / 60 minutes = 60 hours

D. Rowan Premium Plan

Wages = Time taken X Rate per hour + $\frac{Time\ Saved}{Time\ Allowed}$ X Time taken X Rate per hour

= (48 hours X Rs. 15) + ($\frac{60-48\ hours}{60 hours}$ X 48 hours X Rs. 15)

= Rs. 720 + Rs. 144
= Rs. 864

(ii) The company may follow Halsey Premium Plan over Rowan Premium Bonus Plan as the total wages paid is lower than that of Rowan Premium Bonus Plan.

EXAM INSIGHTS: This Numerical problem is relating to calculation of wages as per Time rate. Piece rate, Halsey premium plan and Rowan premium plan. First part required calculation of wages while second part required suggestion on selection of plan. Some examinees made mistakes in calculation of wages under piece rate and rowan plan. However, overall performance of the examinees was **above average.**

Question 23

SMC Company Limited is producing a particular design of toys under the following existing incentive system:

Normal working hours in the week	48 hours
Late shift hours in the week	12 hours
Rate of payment	Normal working: ₹ 150 per hour
	Late shift: ₹ 300 per hour

Average output per operator for 60 hours per week (including late shift hours): 80 toys.

The company's management has now decided to implement a system of labour cost payment with either the Rowan Premium Plan or the Halsey Premium Plan in order to increase output, eliminate late shift overtime, and reduce the labour cost.

The following information is obtained:

The standard time allotted for ten toys is seven and half hours.

Time rate: ₹ 150 per hour (as usual).

Assuming that the operator works for 48-hours in a week and produces 100 toys, you are required to calculate the weekly earnings for one operator under-

(i) The existing Time Rate,

(ii) Rowan Premium Plan and,

(iii) **Halsey Premium Plan (50%).** ***(PYP 5 Marks, May'23)***

Answer 23

Working Notes:

(1) Effective rate per hour:

Incentive for 60 hours = (₹ 150 × 48 hours + ₹ 300 × 12 hours)

= 7,200 + 3,600 = ₹ 10,800

= ₹ 10,800 ÷ 60 hours = ₹ 180 per hour

(2) Time taken/ Allowed to produce 100 toys:

= (60 hours ÷ 80 toys) × 100 toys = 75 hours

(3) Time saved = Time Allowed – Time Taken

= 75 hours – 48 hours = 27 hours

(i) Calculation of weekly earnings for one operator under the existing time rate:

= (48 hours x ₹ 150) + (12 hours x ₹ 300) = ₹ 10,800

Alternative solution

= Effective rate per hour (WN-1) × Time required for 100 toys (WN-2)

= ₹ 180 × 75 hours = ₹ 13,500

(ii) Calculation of weekly earnings for one operator under Rowan Premium plan:

(Time taken × Rate per hour) + (Time Saved/ Time Allowed × Time taken × Rate per hour)

= (48 hours × ₹ 150) + [(27 ÷ 75) × 48 × ₹ 150]

= 7,200 + 2,592 = ₹ 9,792

(iii) Calculation of weekly earnings for one operator under Halsey Premium plan:

(Time taken × Rate per hour) + (50% of Time Saved × Rate per hour)

= (48 hours × ₹ 150) + (50% of 27 hours × ₹ 150)

= ₹ 7,200 + ₹ 2,025 = ₹ 9,225

EXAM INSIGHTS: This numerical question was based on calculation of weekly earnings under the Existing Time Rate, Rowan and Halsey premium plans. Most of the examinees answered correctly. Hence, a good performance was observed.

Question 24

The labour turnover rates for the quarter ended 30th June, 2024 are computed as 14%, 8% and 6% under Flux method, Replacement method and Separation method respectively. If the number of workers replaced during 1st quarter of the financial year 2024-25 is 36, COMPUTE the following:

(i) The number of workers recruited and joined; and

(ii) The number of workers left and discharged. ***(RTP Sep'24)***

Answer 24

Labour Turnover Rate (Replacement method)	=	$\frac{\text{No. of workers replaced}}{\text{Average No.of workers}}$
Or, $\frac{8}{100}$	=	$\frac{36}{\text{Average No.of workers}}$
Or, Average No. of workers	=	450
Labour Turnover Rate (Separation method)	=	$\frac{\text{No. of workers separated}}{\text{Average No.of workers}}$
Or, $\frac{6}{100}$	=	$\frac{\text{No. of workers separated}}{450}$
Or, No. of workers separated	=	27
Labour Turnover Rate (Flux Method) = $\frac{\textit{No.of Separations+No.of accession (joinings)}}{\textit{Average No.of workers}}$		
Or, $\frac{14}{100}$	=	$\frac{27 + \text{No.of accessions (Joinings)}}{450}$
Or, 100 (27 + No. of Accessions)	=	6,300
Or, No. of Accessions	=	36

(i) The No. of workers recruited and Joined = 36
(ii) The No. of workers left and discharged = 27

Question 25

A skilled worker is paid a guaranteed wage rate of ₹150.00 per hour.The standard time allowed for a job is 50 hours. He gets an effective hourly rate of wages of ₹ 180.00 under Rowan Incentive Plan due to saving in time. For the same saving in time, CALCULATE the hourly rate of wages he will get, if he is placed under Halsey Premium Scheme (50%). ***(MTP 5 Marks Aug'24)***

Answer 25

Increase in hourly rate of wages under Rowan Plan is ₹ 30 i.e.(₹180 – ₹150)

$\frac{\text{Time Saved}}{\text{Time Allowed}} \times ₹\,150 = ₹\,30$ (Please refer Working Note)

Or, $\frac{\text{Time Saved}}{\text{50 Hours}} \times ₹\,150 = ₹\,30$

Or, Time saved = $\frac{1,500}{\text{50 Hours}}$ 10 hours

Therefore, Time Taken is 40 hours i.e. (50 hours – 10 hours)

Effective Hourly Rate under Halsey System:

Time saved	= 10 hours	
Bonus @ 50%	= 10 hours × 50% × ₹150	= Rs 750
Total Wages	= (₹150 × 40 hours + ₹750)	= Rs 6,750
Effective Hourly Rate	= ₹6,750 ÷ 40 hours	= ₹168.75

Working Note:

Effective hourly rate

$$= \frac{\text{Time Taken} \times \text{Rate per hour}) + \frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time saved} \times \text{Rate per hour}}{\text{Time Taken}}$$

$$\text{Or, } ₹180 = \frac{\text{Time Taken} \times \text{Rate per hour}}{\text{Time taken}} + \frac{\frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time saved} \times \text{Rate pr hour}}{\text{Time Taken}}$$

$$\text{Or, } ₹180 - \frac{\text{Time Taken} \times \text{Rate per hour}}{\text{Time taken}} = \frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time saved} \times \text{Rate pr hour} \times \frac{1}{\text{Time Taken}}$$

$$\text{Or, } ₹\,180 - ₹\,150 = \frac{\text{Time Saved}}{\text{Time Allowed}} \times ₹\,150$$

Question 26

LDR

In a factory, the basic wage rate is Rs. 300 per hour and overtime rates are as follows:

Before and after normal working hours	180% of basic wage rate
Sundays and holidays	230% of basic wage rate
During the previous year, the following hours were worked	
- Normal time	1,00,000 hours
- Overtime before and after working hours	20,000 hours
Overtime on Sundays and holidays	5,000 hours
Total	1,25,000 hours

The following hours have been worked on job 'A'

Normal	1,000 hours
Overtime before and after working hrs.	100 hours.
Sundays and holidays	25 hours.
Total	1,125 hours

You are required to CALCULATE the labour cost chargeable to job 'A' and overhead in each of the following instances:

(i) Where overtime is worked regularly throughout the year as a policy due to the workers' shortage.

(ii) Where overtime is worked irregularly to meet the requirements of production.

(iii) Where overtime is worked at the request of the customer to expedite the job.
(MTP 10 Marks, Oct'20) (Same concept different figures RTP Nov'21, Old & New SM)

Answer 26

Workings

Basic wage rate: ₹ 300 per hour

Overtime wage rate before and after working hours : ₹ 300 × 180% = 540 per hour

Overtime wage rate for Sundays and holidays: ₹ 300 × 230% = 690 per hour

Computation of average inflated wage rate (including overtime premium):

Particulars	Amount (Rs.)
Annual wages for the previous year for normal time (1,00,000 hrs. × Rs. 300)	3,00,00,000
Wages for overtime before and after working hours (20,000 hrs. × Rs. 540)	1,08,00,000
Wages for overtime on Sundays and holidays (5,000 hrs. × Rs. 690)	34,50,000
Total wages for 1,25,000 hrs.	**4,42,50,000**

Average inflated wage rate = $\frac{Rs.4,42,50,000}{1,25,000\ hours}$ = ₹ 354

(i) Where overtime is worked regularly as a policy due to workers' shortage:

The overtime premium is treated as a part of employee cost and job is charged at an inflated wage rate.

Hence, employee cost chargeable to job 'A'

= Total hours × Inflated wage rate = 1,125 hrs. × Rs. 354 = Rs. 3,98,250

(ii) Where overtime is worked irregularly to meet the requirements of production:

Basic wage rate is charged to the job and overtime premium is charged to factory overheads as under:

Employee cost chargeable to Job 'A': 1,125 hours @ Rs.300 per hour = Rs.3,37,500

Factory overhead: {100 hrs. × Rs. (540 – 300)} + {25 hrs. × Rs. (690 – 300)}

= {Rs. 24,000 + Rs. 9,750} = Rs. 33,750

(iii) Where overtime is worked at the request of the customer, overtime premium is also charged to the job as under:

Job 'A' Employee cost	1,125 hrs. @ Rs. 300	=	3,37,500
Overtime premium	100 hrs. @ Rs. (540 – 300)	=	24,000
	25 hrs. @ Rs. (690 – 300)	=	9,750
Total			**3,71,250**

Question 27

Wave Limited has replaced 72 workers during the quarter ended 31st March 2022. The labour rates for the quarter are as follows:

Flux method	**16%**
Replacement method	**8%**
Separation method	**5%**

You are required to ascertain:

(i) Average number of workers on roll (for the quarter),

(ii) Number of workers left and discharged during the quarter,

(iii) Number of workers recruited and joined during the quarter,

(iv) Equivalent employee turnover rates for the year. ***(PYP 5 Marks May'22, Old & New SM)***

Answer 27

Working Note:

(i) Average number of workers on roll (for the quarter):

Employee Turnover rate using Replacement method

$$= \frac{\text{No of replacements}}{\text{Average number of workers on roll} \times} \times 100$$

Or, $\frac{8}{10} = \frac{72}{\text{Average number of workers on roll} \times} \times 100$

Or, Average number of workers on roll = $\frac{72 \times 100}{8}$ = **900**

(ii) Number of workers left and discharged:

Employee turnover rate (Separation method

$$= \frac{\text{No of Separations(S)}}{\text{Average number of workers on roll} \times} \times 100 = \frac{5}{10} = \frac{S}{900}$$ Or, S = 45

Hence, number of workers left and discharged comes **to 45**

(iii) **Number of workers recruited and joined:**

Employee turnover rate (Flux method)

$$= \frac{\text{No.of Separations}\cdot(S)+\text{No.of Accessions}(A)}{\text{Average number of workers on roll}}$$

Or, $\frac{16}{10} - \frac{45+A}{900}$ Or, $A = \left[\frac{1.44.00}{100} - 45\right] = 99$

No. of worker recruited and joined 99

(iv) **Calculation of Equivalent employee turnover rates:**

$$= \frac{\text{Employee turnover rate for the quarter(s)}}{Number\ of\ quarter(S)} \times 4 \text{ quarters}$$

Using Flux method $= \frac{16\%}{1} \times 4 = 64\%$

Using Replacement method $= \frac{8\%}{1} \times 4 = 32\%$

Using g Separation method $= \frac{5\%}{1} \times 4 = 20\%$

EXAM INSIGHTS: This Numerical question was on employee cost for the calculation of average number of workers on roll, number of workers left and discharged, number of workers recruited and joined & equivalent employee turnover rates for the year by using Replacement Method, Separation Method and Flux Method. Many examinees faced hardship in the calculation of number of workers recruited and joined and equivalent employee turnover rates. Performance of the examinees was average.

Question 28

Archika Tyre Manufacturing Private Limited has four workers Ram, Shyam, Mohan & Kundan who are paid wages on the basis of ₹ 100 per day, ₹ 120 per day, ₹ 130 per day & ₹ 2500 per month respectively.
Standard working days in a week are six of 8 hours per day. For the month of October 2022, there was only one holiday other than Sunday for which no payment was made to employees except Kundan who was paid for full month. Sundays are considered paid holidays i.e. employees are paid for Sunday also even there is no working on that day. Provident fund contribution is 8% of monthly wages by employer and employee each. ESI contribution is 5% of monthly wages by employer and 4% of monthly wages by employee.
On the basis of above information, you are required to CALCULATE (regarding the month of October 2022):

(i) **Amount of net wages receivable by each employee from the employer.**
(ii) **What is the total amount of Provident Fund required to be deposited by employer?**
(iii) **What is the total amount of ESI required to be deposited by employer?**
(iv) **What is the total labour cost to employer?**
(v) **If total material cost is ₹ 20,000 for October 2022 and overheads are charged equal to labour cost, calculate total cost for the month.** ***(MTP 10 Marks Sep'22)***

Answer 28

(i) **Calculation of net wages receivable by each employee from the employer (October 2022):**

	Ram (₹)	Shyam (₹)	Mohan (₹)	Kundan (₹)	Total (₹)
Wages for October 2022	3,000 (₹ 100 x 30 days)	3,600 (₹ 120 x 30 days)	3,900 (₹ 130 x 30 days)	2,500	13,000
Less: Employee Contribution to PF @ 8%	240	288	312	200	1,040
Less: Employee Contribution to ESI @ 4%	120	144	156	100	520
Net Wages Receivable	**2,640**	**3,168**	**3,432**	**2,200**	**11,440**

(ii) **Calculation of total amount of Provident Fund required to be deposited by employer (October 2022):**

	(₹)
Total Wages for the month	13,000
Employer's Contribution to Provident Fund @8% of ₹ 13,000	1,040

Add: Employee's Contribution to Provident Fund @8% of ₹ 13,000	1,040
Total amount of Provident Fund required to be deposited by employer	**2,080**

(iii) Calculation of total amount of ESI required to be deposited by employer (October 2022):

	(₹)
Total Wages for the month	13,000
Employer's Contribution to ESI @5% of ₹ 13,000	650
Add: Employee's Contribution to ESI @4% of ₹ 13,000	520
Total amount of ESI required to be deposited by employer	**1,170**

(iv) Total labour cost to employer (October 2022):

	(₹)
Total Wages for the month	13,000
Add: Employer's Contribution to Provident Fund @8% of ₹ 13,000	1,040
Add: Employer's Contribution to ESI @5% of ₹ 13,000	650
Total labour cost to employer	**14,690**

(v) Calculation of Total Cost for October 2022

	(₹)
Total Material Cost	20,000
Total Labour Cost	14,690
Total Overheads (Equal to Labour Cost)	14,690
Total Cost	**49,380**

Question 29

LDR

HR Ltd. is progressing in its legal industry. One of its trainee executives, Mr. H, in the Personnel department has calculated labour turnover rate 24.92% for the last year using Flux method.
Following is the data provided by the Personnel department for the last year:

Employees	At the beginning	Joined	Left	At the end
Records clerk	810	1,620	90	2,340
Human Resource Manager	?	30	90	60
Legal Secretary	?	90	---	?
Staff Attorney	?	30	30	?
Associate Attorney	?	30	---	45
Senior Staff Attorney	6	---	---	18
Senior Records clerk	12	---	---	51
Litigation attorney	?	---	---	?
Employees transferred from the Subsidiary Company				
Senior Staff Attorney	---	12	---	---
Senior Records clerk	---	39	---	---
Employees transferred to the Subsidiary Company				
Litigation attorney	---	---	90	---
Associate Attorney	---	---	15	---

At the beginning of the year there were total 1,158 employees on the payroll of the company. The opening strength of the Legal Secretary, Staff Attorney and Associate Attorney were in the ratio of 3 : 3 : 2.
The company has decided to abandon the post of Litigation attorney and consequently all the Litigation attorneys were transferred to the subsidiary company.
The company and its subsidiary are maintaining separate set of books of account and separate Personnel Department.
You are required to:
(a) CALCULATE Labour Turnover rate using Replacement method and Separation method.
(b) VERIFY the Labour turnover rate calculated under Flux method by Mr. H *(RTP Nov'22)*

Answer 29

Working Notes:

(i) Calculation of no. of employees at the beginning and end of the year

	At the Beginning of the year	At the end of the year
Records clerk	810	2,340
Human Resource Manager [Left- 90 + Closing- 60 – Joined- 30]	120	60
Legal Secretary*	45	135
Staff Attorney*	45	45
Associate Attorney*	30	45
Senior Staff Attorney	6	18
Senior Records clerk	12	51
Litigation attorney	90	0
Total	**1,158**	**2,694**

(*) At the beginning of the year:

Strength of Legal Secretary, Staff Attorney and Associate Attorney =

[1158 – {810 + 120 + 6 + 12 + 90} employees] or [1158 – 1038 = 120 employees]

[{Legal Secretary - $120 \times \frac{3}{8} = 45$, Staff Attorney - $120 \times \frac{3}{8} = 45$ & Associate Attorney - $120 \times \frac{2}{8} = 30$} employees]

At the end of the year:

[Legal Secretary -(Opening 45 + 90 Joining) = 135; Staff Attorney - (Opening 45 + 30 Joined – 30 Left) = 45]

(ii) No. of Employees Separated, Replaced and newly recruited during the year

Particulars	Separations	New Recruitment	Replacement	Total Joining
Records clerk	90	1,530	90	1,620
Human Resource Manager	90	--	30	30
Legal Secretary	--	90	--	90
Staff Attorney	30	--	30	30
Associate Attorney	15	15	15	30
Senior Staff Attorney	--	12	--	12
Senior Records clerk	--	39	--	39
Litigation attorney	90	--	--	--
Total	**315**	**1,686**	**165**	**1,851**

(Since, HR Ltd. and its subsidiary are maintaining separate Personnel Department, so transfer-in and transfer-out are treated as recruitment and separation respectively.)

(a) Calculation of Labour Turnover rate:

$$\text{Replacement Method} = \frac{\text{No.of employees replaced during the year}}{\text{Average no.of employees onroll}} \times 100$$

$$= \frac{165}{(1{,}158+2{,}694)/2} \times 100 = \frac{165}{1{,}926} \times 100 = 8.57\%$$

$$\text{Separation Method} = \frac{\text{No. of employees separated during the year}}{\text{Average no. of employees onroll}} \times 100$$

$$= \frac{315}{1{,}926} \times 100 = 16.36\%$$

(b) Labour Turnover rate under Flux Method:

$$= \frac{\text{No.of employees(Joined+Separated)duringthe year}}{\text{Averageno.of employees on roll}} \times 10$$

$$= \frac{\text{No.of employees (Replaced + New recruited + Separated) during the year}}{\text{Average no.of employees on roll}} \times 100$$

$$= \frac{1{,}851+315}{1{,}926} \times 100 = 112.46\%$$

Labour Turnover rate calculated by Mr. H is incorrect as it seems he has not taken the No. of new recruitment while calculating the labour turnover rate under Flux method.

Question 30

ABC Ltd. has its factory at two locations viz Noida and Patparganj. Rowan plan is used at Noida factory and Halsey plan at Patparganj factory.

Standard time and basic rate of wages are same for a job which is similar and is carried out on similar

machinery. Normal working hours is 9 hours per day in a 5 day week.
Job at Noida factory is completed in 36 hours while at Patparganj factory it has taken 33 hours 45 minutes. Conversion costs at Noida and Patparganj are Rs. 6,084 and Rs. 5,569 respectively. Overheads account for Rs. 25 per hour.
REQUIRED:
(i) To find out the normal wage; and
(ii) To compare the respective conversion costs. (MTP 10 Marks, Oct'21, PYP Nov'19 10 Marks)

Answer 30

Particulars	Noida	Patparganj
Hours worked	36 hr.	33.75 hr.
Conversion Costs	Rs. 6,084	Rs. 5,569
Less: Overheads	Rs. 900 (Rs. 25 × 36 hr.)	Rs.Rs.844 (Rs.25 × 33.75 hr.)
Labour Cost	Rs.5,184	Rs.Rs.4,725

(i) Finding of Normal wage rate:

Let Wage rate be Rs. R per hour, this is same for both the Noida and Patparganj factory.
Normal wage rate can be found out taking total cost of either factory.

Noida: Rowan Plan

Total Labour Cost = Wages for hours worked + Bonus as per Rowan plan

Rs.5184 = hours worked × rate per hour + ($\frac{\text{Time saved}}{\text{Time allowed}}$ × Hours worked × Rate per hour)

Or, Rs. 5184 = 36 hr. × R + $(\frac{45-36}{45} \times 36 \times R)$

Or, Rs. 5184 = 36R + 7.2R

R = 120

Normal wage = 36 hours × Rs.120 = Rs.4,320

OR

Patparganj: Halsey Plan

Total Labour Cost = Wages for hours worked + Bonus as per Halsey plan

Rs. 4,725 = Hours worked × Rate per hour + (50%×Hours saved × Rate per hour)

Rs.4,725 = 33.75 hr. × R + 50% × (45 hr. – 33.75 hr.) × R

Rs.4,725 = 39.375 R

R = Rs.120

Normal Wage = 33.75 hrs × Rs.120 = Rs.4,050

(ii) Comparison of conversion costs:

Particulars	Noida (Rs.)	Patparganj (Rs.)
Normal Wages (36 x 120)	4,320	
(33.75 x 120)		4,050
Bonus (7.2 x 120)	864	
(5.625 x 120)		675
Overhead	900	844
	6,084	5,569

EXAM INSIGHTS: This was a numerical question relating to the topic 'Employee Cost'. The question comprised of two parts viz. (i) to find out normal wage rate using Rowan / Halsey plan and (ii) to compare the respective conversion costs. Very well answered by some of the examinees and these examinees have obtained full marks. Overall performance of the examinees in this question was average.

Question 31

JBL Sisters operates a boutique which works for various fashion houses and retail stores. It has employed 26 workers and pays them on time rate basis. On an average an employee is allowed 8 hours for boutique work on a piece of garment. In the month of December 2020, two workers M and J were given 15 pieces and

21 pieces of garments respectively for boutique work. The following are the details of their work:

	M	J
Work assigned	15 pcs.	21 pcs.
Time taken	100 hours	140 hours

Workers are paid bonus as per Halsey System. The existing rate of wages is ₹ 60 per hour. As per the new wages agreement the workers will be paid ₹ 72 per hour w.e.f. 1st January 2021. At the end of the month December 2020, the accountant of the company has wrongly calculated wages to these two workers taking ₹ 72 per hour.

Required:

(i) CALCULATE the loss incurred due to incorrect rate selection.

(ii) CALCULATE the loss incurred due to incorrect rate selection, had Rowan scheme of bonus payment followed.

(iii) CALCULATE the loss/ savings if Rowan scheme of bonus payment had followed.

(iv) DISCUSS the suitability of Rowan scheme of bonus payment for JBL Sisters? *(RTP May'21)*

Answer 31

Workings Notes:

Calculation of Total hours saved:

	M	J
No. of garments assigned (Pieces.)	15	21
Hour allowed per piece (Hours)	8	8
Total hours allowed (Hours)	120	168
Hours Taken (Hours)	100	140
Hours Saved (Hours)	20	28

(i) Calculation of loss incurred due to incorrect rate selection:

(While calculating loss only excess rate per hour has been taken)

	M (₹)	J (₹)	Total (₹)
Basic Wages	1,200 (100 Hrs. × ₹12)	1,680 (140 Hrs. × ₹12)	2,880
Bonus (as per Halsey Scheme) (50% of Time Saved × Excess Rate)	120 (50% of 20 Hrs. × ₹12)	168 (50% of 28 Hrs. × ₹12)	288
Excess Wages Paid	1,320	1,848	3,168

(ii) Calculation of loss incurred due to incorrect rate selection had Rowan scheme of bonus payment followed:

	M (₹)	J (₹)	Total (₹)
Basic Wages	1,200 (100 Hrs. × ₹12)	1,680 (140 Hrs. × ₹12)	2,880
Bonus (as per Rowan Scheme) $\left(\frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time Saved} \times \text{Excess Rate}\right)$	200 $\left(\frac{100}{120} \times 20 \times \text{Rs. } 12\right)$	280 $\left(\frac{140}{168} \times 28 \times \text{Rs. } 12\right)$	480
Excess Wages Paid	1,400	1,960	3,360

(iii) Calculation of amount that could have been saved if Rowan Scheme were followed

	M (₹)	J (₹)	Total (₹)
Wages paid under Halsey Scheme	1,320	1,848	3,168
Wages paid under Rowan Scheme	1,400	1,960	3,360
Difference (loss)	(80)	(112)	(192)

(iv) Rowan Scheme of incentive payment has the following benefits, which is suitable with the nature of business in which JBL Sisters operates:

(a) Under Rowan Scheme of bonus payment, workers cannot increase their earnings or bonus by merely

increasing its work speed. Bonus under Rowan Scheme is maximum when the time taken by a worker on a job is half of the time allowed. As this fact is known to the workers, therefore, they work at such a speed which helps them to maintain the quality of output too.

(b) If the rate setting department commits any mistake in setting standards for time to be taken to complete the works, the loss incurred will be relatively low.

Question 32

A total of 108 labour hours have been put in a particular job card for repair work engaging a semi-skilled and skilled labour (Mr. Deep and Mr. Sam respectively). The hours devoted by both the workers individually on daily basis for this particular job are given below:

Monday	Tuesday	Wednesday	Thursday	Friday
10.5	8.0	10.5	9.5	10.5

The skilled labour also worked on Saturday for 10 hours.

Sunday is a weekly holiday and each worker has to work for 8 hours on all week days and 5 hours on Saturdays; the workers are however paid full wages for Saturday (8 hours for 5 hours worked).

Semi-skilled and skilled worker is paid ordinary wage @ ₹ 400 and ₹ 600 respectively per day of 8 hours labour. Further, the workers are also paid dearness allowance @ 20%.

Extra hours worked over and above 8 hours are also paid at ordinary wage rate however, overtime premium of 100% of ordinary wage rate is paid if a worker works for more than 9 hours in a day AND 48 hours in a week.

You are required to COMPUTE the wages payable to Mr. Deep (Semi-skilled) and Mr. Sam (Skilled).

(RTP May'22)

Answer 32

Calculation of total normal hours to be paid for Mr. Deep (Semi-skilled):

Day	Normal hours	Extra hours	Overtime hours	Equivalent normal hours for overtime worked	Total normal hours
	A	B	C	D = C×2	E = A+B+D
Monday	8	1	1½	3	12
Tuesday	8	--	--	--	8
Wednesday	8	1	1½	3	12
Thursday	8	1	½	1	10
Friday	8	1	1½	3	12
Saturday	--	--	--	--	--
Total	40	4	5	10	54

Calculation of total normal hours to be paid for Mr. Sam (Skilled):

Day	Normal hours	Extra hours	Overtime hours	Equivalent normal hours for overtime worked	Total normal hours
	A	B	C	D = C×2	E = A+B+D
Monday	8	1	1½	3	12
Tuesday	8	---	---	---	8
Wednesday	8	1	1½	3	12
Thursday	8	1	½	1	10
Friday	8	1	1½	3	12
Saturday	5	3* + 1	1**	2	11
Total	**45**	**8**	**6**	**12**	**65**

*Mr. Sam will be paid for equivalent 8 normal working hours at ordinary wage rate, though 5 hours of working is required on Saturday. Further, extra 9th hour worked will also be paid at ordinary wage rate. *

* Overtime of 1 hour worked over and above 9 hours will be paid at overtime rate.

Wages payable:

	Mr. Deep	Mr. Sam
Basic Wages per hour (₹ 400/8, ₹ 600/8) (₹)	50	75
Dearness allowance per hour (@ 20%) (₹)	10	15
Hourly rate (₹)	60	90
Total equivalent normal hours	54	65
Total Wages payable (₹)	**3,240**	**5,850**

Question 33

A worker took 60 hours to complete a job in a factory. The normal rate of wages is ₹ 80 per hour. The worker is entitled to receive bonus according to the Halsey Premium Plan. Factory overhead is recovered on the job at ₹ 60 per man hour actually worked. The factory cost of the job is ₹ 37,280 and material cost of the job is ₹ 28,400.

Required:

(i) **Calculate the standard time for completing the job and effective hourly rate under the Halsey Premium plan.**

(ii) **Calculate the effective rate of earnings per hour if wages would have been paid under the Rowan Plan.** ***(PYP 5 Marks Nov'23)***

Answer 33

(i) Calculation of standard time and effective hourly rate:

Standard time = Actual hours worked + time saved = 60 +12 = 72 hours

Effective hourly rate under Halsey premium plan = $\frac{Total\ labour\ cost}{Actual\ labour\ worked} = \frac{5,280}{60}$

= ₹ 88

(ii) Calculation of effective rate earnings under Rowan plan:

(Rate × Actual hours worked) + Rate × $\frac{Time\ Saved}{Std.\ Time}$ × Time Taken

₹ 80 × 60 hours + ₹ 80 × $\frac{12}{72}$ × 60

₹ 4,800 + 800 = ₹ 5,600

Effective rate per hour = 5,600 ÷ 60 hour = ₹ 93.33

Working Note:

(1) Calculation of labour cost = Factory cost – Material cost – Factory Overhead

= 37,280 – 28,400 – (₹ 60 × 60 hours)

= 37,280 – 28,400 – 3,600 = ₹ 5,280

(2) Calculation of bonus and time saved

Total labour cost = Normal Rate × Actual hours worked + ½ time saved × normal rate

₹ 5,280 = (₹ 80 × 60 hours) + ½ (time saved × ₹ 80)

40 × time saved = ₹ 5,280 – ₹ 4,800

Time saved = (5,280 - 4,800) ÷ 40

Time saved = 12 hours

The solution can also be presented in following way:

(b)

Particulars	(₹)
Factory Cost	37,280
Less: Factory Overheads 60 x ₹ 60	3,600
Prime Cost	33,680
Direct material	28,400
Direct wages (Balancing Figure)	5,280

(i) Wages under Halsey Plan (Rate × Actual hours worked) + Rate × $\frac{Time\ Saved}{Std.Time}$ × time taken

₹ 5,280 = 60 x ₹ 80 + (S* – 60)/2 x ₹ 80

₹ 5,280 = ₹ 4,800 + 40S – 2,400

S = ₹ 2,880/40 = 72 hours

*Standard time

Effective rate of earnings per hour = 5,280/60 = ₹ 88

(ii) Wages under Rowan Plan: (Rate × Actual hours worked) + Rate × $\frac{Time\ Saved}{Std.Time} \times time$ taken

= 60 × 80 + $\frac{72-60}{72}$ × 60 × 80 = ₹ 5,600

Effective rate of earnings per hour = 5,600/60 = ₹ 93.33

EXAM INSIGHTS: Question on Employee cost requiring calculation of standard time for completing the job using the cost details given in the question, and effective hourly rate under the Halsey Premium plan and Rowan plan. Most of the examinees could not calculate the labour cost correctly from the given data and hence could not proceed forward in the right manner. Overall performance of the examinees was average.

Question 34

LDR

The following particulars have been compiled in respect of three workers, which are under consideration of the management.

	I	II	III
Actual hours worked	380	100	540
Hourly rate of wages (in ₹)	40	50	60
Productions in units:			
- Product X	210	-	600
- Product Y	360	-	1350
- Product Z	460	250	-
Standard time allowed per unit of each product is:			
	X	Y	Z
Minutes	15	20	30

For the purpose of piece rate, each minute is valued at ₹ 1/- You are required to calculate the wages of each worker under:

(i) Guaranteed hourly rate basis

(ii) Piece work earning basis, but guaranteed at 75% of basic pay (Guaranteed hourly rate if his earnings are less than 50% of basic pay.)

(iii) Premium bonus basis where the worker received bonus based on Rowan scheme.

(MTP 10 Marks Mar'24) (MTP 5 Marks May '20, RTP May'19) (Same concept different figures MTP 5 Marks Nov'21)

Answer 34

(i) Computation of wages of each worker under guaranteed hourly rate basis

Worker	Actual hours worked (Hours)	Hourly wage rate (₹)	Wages (₹)
I	380	40	15,200
II	100	50	5,000
III	540	60	32,400

(ii) Computation of Wages of each worker under piece work earning basis

Product	Piece rate per unit (₹)	Worker-I		Worker-II		Worker-III	
		Units	Wages (₹)	Units	Wages (₹)	Units	Wages (₹)
X	15	210	3,150	-	-	600	9,000
Y	20	360	7,200	-	-	1,350	27,000
Z	30	460	13,800	250	7,500	-	-
Total			24,150		7,500		36,000

Since each worker's earnings are more than 50% of basic pay.

Therefore, worker-I, II and III will be paid the wages as computed i.e. ₹24,150, ₹7,500 and ₹36,000 respectively.

Working Notes:

1. Piece rate per unit

Product	Standard time per unit in minute	Piece rate each minute (₹)	Piece rate per unit (₹)
X	15	1	15
Y	20	1	20
Z	30	1	30

2. Time allowed to each worker

Worker	Product-X	Product-Y	Product-Z	Total Time (Hours)
I	210 units × 15 = 3,150	360 units × 20 = 7,200	460 units × 30 = 13,800	24,150/60 = 402.50
II	-	-	250 units × 30 = 7,500	7,500/60 = 125
III	600 units × 15 = 9,000	1, 350 units × 20 = 27,000	-	36,000/60 = 600

(iii) Computation of wages of each worker under Premium bonus basis (where each worker receives bonus based on Rowan Scheme)

Worker	Time Allowed (Hr.)	Time Taken (Hr.)	Time saved (Hr.)	Wage Rate per hour (₹)	Earnings (₹)	Bonus (₹) *	Total Earning (₹)
I	402.5	380	22.5	40	15,200	850	16,050
II	125	100	25	50	5,000	1,000	6,000
III	600	540	60	60	32,400	3,240	35,640

*$\frac{\text{Time Taken}}{\text{Time Allowed}}$ × Time Saved× Wage Rate

Worker-I = $\frac{380}{402.5} \times 22.5 \times 40 = 850$; Worker-II = $\frac{100}{125} \times 25 \times 50 = 1{,}000$

Worker-I = $\frac{540}{600} \times 60 \times 60 = 3{,}240$

Question 35

WEPL Ltd, a manufacturing company is facing the problem of high labour turnover in the factory. Before analysing the causes and taking remedial steps, the management of the company wants to ascertain the profit lost for the year 2022-23 on account of labour turnover. For this purpose, it has given you the following information:

(i) Sales for the last year 2022-23 was ₹ 2,16,80,000 and P/V ratio was 15%.

(ii) The total number of actual hours worked by the direct labour force was 5,00,000 hours. The actual direct labour hours included 60,000 hours attributable to training new recruits, out of which 40% of the hours were unproductive.

(iii) Due to delays by the Personnel Department in filling vacancies on account of labour turnover, 95,000 potential productive hours (excluding unproductive training hours) were lost.

(iv) 1,500 units of the output produced during training period were defective. Cost of rectification of defective units was ₹ 40 per unit.

(v) Settlement cost of the workers leaving the organization was ₹ 2,37,880.

(vi) Recruitment and Selection cost was ₹ 1,40,000.

(vii) Cost of Training and Induction was ₹ 1,61,950.

Assuming that the potential production lost as a consequence of labour turnover could have been sold at prevailing prices, find the profit lost for the year 2022-23 on account of labour turnover.

(PYP 6 Marks May '24) (Same concept different figures MTP 5 marks Apr'22, SM)

Answer 35

Workings:

(i) Computation of productive hours

Actual hours worked (given)	5,00,000
Less: Unproductive training hours	24,000

Actual productive hours	4,76,000

(ii) Productive hours lost:

Loss of potential productive hours+ Unproductive training hours

= 95,000 + 24,000 = 1,19,000 hours

(iii) Loss of contribution due to unproductive hours :

$$= \frac{Sales value}{\text{Actual productive hours}} \times \text{Total unproductive hours}$$

$$= \frac{₹2,16,80,000}{4,76,000\ hrs} \times 1,19,000 \text{ hours} = ₹54,20,000$$

Contribution lost for 1,19,000 hours= ₹ 54,20,000 x 15% = ₹8,13,000

Computation of profit forgone on account of employee turnover

	(₹)
Contribution foregone (as calculated above)	8,13,000
Settlement cost due to leaving	2,37,880
Recruitment and Selection cost	1,40,000
Training and Induction costs	1,61,950
Cost of Rectification (1500 units x ₹40)	60,000
Profit foregone	**14,12,830**

The above question can also be solved in alternative way after taking proper assumptions

Workings:

(i) Computation of productive hours

Actual hours worked (given)	5,00,000
Less: Unproductive training hours	24,000
Actual productive hours	4 ,76,000

(ii) Productive hours lost:

Loss of potential productive hours

= 95,000 hours

(iii) Loss of contribution due to unproductive hours :

$$= \frac{Sales value}{\text{Actual productive hours}} \times \text{Total unproductive hours}$$

$$= \frac{₹2,16,80,000}{4,76,000\ hrs} \times 95,000 \text{ hours} = ₹43,26,891$$

Contribution lost for 95,000 hours= ₹ 43,26,891 x 15%

= ₹ 6,49,034(approx.)

Computation of profit forgone on account of employee turnover

	(₹)
Contribution foregone (as calculated above)	6,49,034
Settlement cost due to leaving	2,37,880
Recruitment and Selection cost	1,40,000
Training and Induction costs	1,61,950
Cost of Rectification (1500 units x ₹40)	60,000
Profit foregone	**12,48,864**

Question 36

In a factory there are 50 workers, working 8 hours per day including 30 minutes for lunch break, worked for 160 days during a period of six months ended on 31st December, 2023. During this period total employee's cost was recorded ₹ 3,90,000. The management of the factory decided the overtime premium rates for the month of January 2024 as under:

Sundays and holidays 180% of basic wages rate Before and after normal working hours 160% of basic wages rate

During the last six months (ended on 31st December, 2023), the following hours were worked:

Normal time	56,250
Sundays and holidays	750
Before and after normal working hours	3,000

Total hours·	60,000

During the month of January 2024, the factory worked on a job BX in the following manner.

Normal working	2,400	men hours
Overtime on Sundays and holidays	200	men hours
Overtime before and after normal working	400	men hours
Total hours	3,000	

You are required to calculate the labour cost chargeable to job BX and overheads in each of the following situations:

(i) Where overtime is worked regularly in whole year as a policy on account of shortage of workers.
(ii) Where overtime is worked irregularly to meet the requirement of production.
(iii) Where overtime is worked at the request of the customer to complete the job in time.
(iv) Where overtime is worked on account of flood in the area. *(PYP 6 Marks Sep'24)*

Answer 36

Workings

Calculation of Basic Wage Rate

Effective Working Hours for six months ended 31st December, 2023

= 50 workers x (8-0.5) hours per day x 160 days = 60,000 hours

$$\text{Basic Wage Rate} = \frac{₹\ 3,90,000}{60,000} = ₹6.50 \text{ per hour}$$

Basic wage rate : ₹6.50 per hour

Overtime wage rate for Sundays and holidays : ₹6.50 × 180%
= ₹11.70 per hour

Overtime wage rate before and after working hours : ₹6.50 × 160% = ₹10.40 per hour

Computation of average inflated wage rate (including overtimepremium):

Particulars	(₹)
Annual wages for the normal time (56,250 hrs × ₹6.50)	3,65,625
Wages for overtime on Sundays and holidays(750 hrs × ₹11.70)	8,775
Wages for overtime before and after working hours(3,000 hrs × ₹10.40)	31,200
Total wages for 60,000 hrs	**4,05,600**

$$\text{Average inflated wage rate} = \frac{₹\ 4,05,600}{60,000 \text{ hours}} = ₹\ 6.76 \text{ per hour}$$

(a) Where overtime is worked regularly as a policy due to shortage of workers:

The overtime premium is treated as a part of employee cost and job is charged at an inflated wage rate.

Hence, employee cost chargeable to job BX

= Total hours × Inflated wage rate = 3,000 hrs. × ₹6.76 = ₹20,280

(b) Where overtime is worked irregularly to meet the requirements of production:

Basic wage rate is charged to the job and overtime premium is chargedto factory overheads as under:

Employee cost chargeable to Job BX: 3,000 hours @ ₹6.50 per hour

= **₹ 19,500**

Factory overhead: {200 hrs. × ₹(11.70 − 6.50)} + {400hrs × ₹(10.40 −6.50)} = {₹1,040 + ₹1,560}

= **₹ 2,600**

(c) Where overtime is worked at the request of the customer to complete the job in time.

Basic wage rate is charged to the job and overtime premium is chargedto job as under:

Employee cost chargeable to Job BX: 3,000 hours @ ₹6.50 per hour

= ₹ 19,500

Overtime premium: {200 hrs × ₹(11.70 − 6.50)} + {400hrs × ₹(10.40 −6.50)} = {₹1,040 + ₹1,560}

= **₹ 2,600**

Total = ₹19,500 + ₹2,600 = ₹22,100

(d) Where overtime is worked on account of flood in the area

Basic wage rate is charged to the job and overtime premium is chargedto costing P & L Account as under:

Employee cost chargeable to Job BX: 3,000 hours @ ₹6.50 per hour

= ₹ 19,500

Costing P&L A/c: {200 hrs × ₹(11.70 − 6.50)} + {400hrs × ₹(10.40 −6.50)} = {₹1,040 + ₹1,560}

= **₹ 2,600**

Total = ₹19,500 + ₹2,600 = ₹22,100

Question 37

AeBee Publishers works for various educational institutes for editing, binding, printing of various books and magazines on job work basis. Currently, the company has employed 30 workers and pays them on hour rate basis for each job assigned. To complete one of the process of binding, the average time allowed to an employee is 8 hours for a 10 pages magazine.

In the month of March, two employees 'Cee' and 'Dee' were given 21 and 30 units of magazines respectively for binding work. The following are the details of the work assigned:

Particulars	'Cee'	'Dee'
Work assigned	21 units	30 units
Time taken	78 hours	114 hours

The existing rate of wages is ₹ 60 per hour along with bonus as per Halsey System.

However, a new wage agreement has been signed between the employees and the company where, employees will be paid ₹ 65 per hour with effect from the April month. But, inadvertently, for the month of March, the accountant of the company paid the wages to these employees considering rate of wages as ₹ 65 per hour.

You are required to CALCULATE the following:

(i) Amount of loss that the company has incurred due to incorrect rate selection in the month of March.

(ii) Loss incurred by the company due to incorrect rate selection if it had followed Rowan scheme of bonus payment.

(iii) Amount that could have been saved if Rowan Scheme of bonus payment were followed. *(RTP Jan'25)*

Answer 37

Particulars	'Cee'	'Dee'
No. of binding work assigned (units)	21	30
Hour allowed per magazine (Hours)	8	8
Total hours allowed (Hours)	168	240
Hours Taken (Hours)	78	114
Hours Saved (Hours)	90	126

(i) Calculation of loss incurred due to incorrect rate selection

(While calculating loss only excess rate per hour has been taken)

Particulars	'Cee'(₹)	'Dee'(₹)	Total (₹)
Basic Wages	390 (78 Hrs. ×₹5)	570 (114 Hrs. × ₹5)	960
Bonus (as per HalseyScheme) (50% of Time Saved ×Excess Rate)	225 (50% of 90 Hrs. × ₹5)	315 (50% of 126 Hrs. × ₹5)	540
Excess Wages Paid	**615**	**885**	**1,500**

(ii) Amount of loss if Rowan scheme of bonus payment were followed

Particulars	'Cee'(₹)	'Dee'(₹)	Total (₹)
Basic Wages	390.00 (78 Hrs. × ₹5)	570.00 (114 Hrs. × ₹5)	960.00
Bonus (as per Rowan Scheme) $\left(\frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time saved} \times \text{Excess Rate}\right)$	208.93 $= \left(\frac{78}{168} \times 90 \times ₹5\right)$	299.25 $= \left(\frac{114}{240} \times 126 \times ₹5\right)$	508.18
Excess Wages Paid	**598.93**	**869.25**	**1,468.18**

(iii) Calculation of amount that could have been saved if Rowan Scheme were followed

Particulars	'Cee' (₹)	'Dee' (₹)	Total (₹)
Wages paid under Halsey Scheme	615.00	885.00	1,500.00
Wages paid under Rowan Scheme	598.93	869.25	1,468.18
Difference saving	**16.07**	**15.75**	**31.82**

Question 38

Shivi is working by employing 10 skilled workers. It is considering the introduction of some incentive scheme – either Halsey scheme (with 50% bonus) or Rowan scheme of wage payment for increasing the labour productivity to cope with the increased demand for the product by 25%. She feels that, if the proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers, it would act as sufficient incentive for them to produce more and she has accordingly given this assurance to the workers.

As a result of this assurance, the increase in productivity has been observed as revealed by the following figures for the current month:

Hourly rate of wages (guaranteed)	₹ 2.00
Average time for producing 1 piece by one worker at the previous performance (this may be taken as time allowed)	2 hours
Number of working days in the month	25
Number of working hours per day for each worker	8
Actual production during the month	1,250 units

Required:

(1) CALCULATE effective rate of earnings per hour under Halsey scheme and Rowan scheme.

(2) CALCULATE the savings of Navya in terms of direct labour cost per piece under the above schemes.

(3) ADVISE Navya about the selection of the scheme to fulfill her assurance *(MTP 4 Marks Dec'24)*

Answer 38

Production during the month	1,250 units
Time allowed for 1,250 units @ 2 hours per unit (1,250 x 2 hours)	2,500 hours
Actual time taken 25 days x 8 hours x 10 workers	2,000 hours
Time saved	500 hours

Labour cost per piece under time rate scheme: 2 hours x ₹ 2 = ₹ 4

Calculation of effective hourly rate under:

Halsey Scheme:

	(₹)
Basic wages of 10 workers: 2,000 hours @ ₹ 2 per hour	4,000
Bonus 50% x (500 hours x ₹ 2)	500
Total wages for 2,000 hours	4,500

Effective hourly rate of earning = $\frac{₹\ 4,500}{2,000\ hours}$ = ₹ 2.25

Labour cost per piece = $\frac{₹\ 4,500}{1,250\ units}$ = ₹ 3.60

Saving in terms of direct labour cost per piece (₹ 4.00 – ₹ 3.60) = ₹ 0.40

Rowan Scheme:

	(₹)
Basic wages (as calculated under Halsey scheme)	4,000
Bonous : 500 hours x $\frac{₹\ 2,000\ hours}{2,500\ hours}$ x ₹ 2	800
Total wages for 2,000 hours	4,800

Effective hourly rate of earnings $\frac{₹\ 4,800}{2,000\ hours}$ = ₹2.40

Labour cost per piece $\frac{₹\ 4,800}{1250\ units}$ = ₹3.84

Saving in terms of direct labour cost per piece (₹ 4.00 – ₹ 3.84) = ₹ 0.16

Advise: Shivi should introduce Halsey incentive scheme, as it gives more saving than the Rowan incentive scheme.

Multiple Choice Questions (MCQ)

1. **Idle time is the time under which-*(SM)***
   (a) Full wages are paid to workers
   (b) No productivity is given by the workers
   (c) Both (a) and (b)
   (d) None of the above

Ans: (c)

2. **Cost of idle time due to non- availability of raw material is-*(SM)***
   (a) Charged to overhead costs
   (b) Charged to respective jobs
   (c) Charged to costing profit and loss account
   (d) None of the above

Ans: (c)

3. **Time and motion study is conducted by-*(SM)***
   (a) Time keeping department
   (b) Personnel department
   (c) Payroll department
   (d) Engineering department

Ans: (d)

4. **Identify, which one of the following, does not account for increasing labour productivity-*(SM)***
   (a) Job satisfaction
   (b) Motivating workers
   (c) High labour turnover
   (d) Proper supervision and control

Ans: (c)

5. **Labour turnover is measured by-*(SM)***
   (a) Number of persons replaced/ average number of workers
   (b) Numbers of persons separated / number of workers at the beginning of the year
   (c) (Number of persons replaced + number of persons separated)/(number of persons at the beginning + the number of persons at the end of the year)
   (d) None of the above

Ans: (a)

6. **Time booking refers to a method wherein___of an employee is recorded. *(SM)***
   (a) Attendance
   (b) Food expenses
   (c) Health status
   (d) Time spent on a particular job

Ans: (d)

7. **Employee Cost includes*(SM)***
   (a) Wages and Salaries
   (b) Allowances and incentives
   (c) Payment for overtime
   (d) All of the above

Ans: (d)

8. **If the time saved is less than 50% of the standard time, then the wages under Rowan and Halsey premium plan on comparison gives-*(SM)***
   (a) More wages to workers under Rowan plan than Halsey plan
   (b) More wages to workers under Halsey plan than Rowan plan
   (c) Equal wages under two plans
   (d) None of the above

Ans: (a)

9. **Standard time of a job is 60 hours and guaranteed time rate is ₹0.30 per hour. What is the amount of wages under Rowan plan if job is completed in 48 hours? *(SM)***
   (a) ₹ 16.20

(b) ₹ 17.28
(c) ₹ 18.00
(d) ₹ 14.40

Ans: (b)

10. Important factors for control of employee cost can be-*(SM)*

(a) Time and Motion Study
(b) Control over idle time and overtime
(c) Control over employee turnover
(d) All of the above

Ans: (d)

11. Out of the following methods attendance is marked by recognizing an employee based on physical and behavioral traits- *(SM)*

(a) Punch Card Attendance method
(b) Bio- Metric Attendance system
(c) Attendance Register method
(d) Token Method

Ans: (b)

12. If overtime is required for meeting urgent orders, the overtime premium should be charged as- *(SM)*

(a) Respective job
(b) Overhead cost
(c) Costing P& L A/c
(d) None of above

Ans: (a)

13. If the amount of wages under Halsey plan is ₹ 420, total time allowed is 8 hours and the guaranteed time rate is ₹ 60 per hour. What is the total time saved by the worker? *(MTP 2 Marks Apr'24)*

(a) 2 hours
(b) 3 hours
(c) 6 hours
(d) 3.5 hours

Ans: (a)

14. In a mutual project, both Raj and Bhuvan are contributing their efforts, using identical materials. Raj receives a bonus based on the Rowan plan, while the Halsey plan determines Bhuvan's bonus. The standard time allocated for the project is 150 hours. Raj completes the project in 90 hours, while Bhuvan finishes it in 120 hours. The normal hourly wage rate for Raj is ₹ 30. The total earnings for both workers are equal.
Calculate the normal hourly wage rate to be paid to Bhuvan. *(PYP 2 Marks Sep'24)*

(a) ₹ 26.50
(b) ₹ 24.00
(c) ₹ 22.50
(d) ₹ 28.00

Ans: (d)

15. On 01-04-2023 number of workers employed in a factory was 150. During the year 30 workers resigned and 5 workers were discharged. Due to resignation and discharge, 15 workers were replaced. For the year 2023-24, labour turnover rate by separation method will be: *(PYP 2 Marks Sep'24)*

(a) 21.43%
(b) 18%
(c) 25%
(d) 30%

Ans: (c)

16. Phalsa Ltd. pays its workers on time-basis because their services cannot be tangibly measured. The company's normal working week includes 5 days of 8 hours each. Sometimes, the workers needs to

work late at night which was 3 nights of 3 hours each for the current week. The average output produced per worker for the week is 120 units.

Information regarding incentive rate is as follows:

Rate of Payment	Day shift: ₹ 320 per hour
	Night shift: ₹ 450 per hour

However, this time-basis payment made workers lazy, making their expected output lower. As workers started doing more of the night shifts for higher earnings with minimal impact on the outputs, the company decided to shift on to a system of payments on output basis. Information regarding amended incentive rate is as follows:

Time-rate (as usual)	:	₹ 320 per hour
Basic time allowed for 15 units	:	5 hours
Piece-work rate	:	Add 15% to basic piece-rate

In the amended incentive system, the normal weekly working hours remained the same while production increased to 135 units.

CALCULATE the labour cost per unit as per the existing incentive system, along with the amended incentive system. *(RTP Jan'25)*

(a) ₹ 140.42 and ₹ 122.67 respectively
(b) ₹ 124.81 and ₹ 138.00 respectively
(c) ₹ 124.81 and ₹ 122.67 respectively
(d) ₹ 140.42 and ₹ 138.00 respectively

Ans: (a)

17. The rate of change in the composition of employee force over the average number of employees for the year is computed as 9% under 'separation method'. However, the same rate is computed as 15% and 30% under 'replacement method' and 'flux method' respectively.
Considering the average number of employees on roll during the year as 200, FIND OUT the number of employees – (i) replaced, (ii) left and discharged and (iii) recruited and joined *(MTP 2 Marks Nov'24)*

(a) Replaced- 18 employees, left and discharged- 30 employees andrecruited & joined- 42 employees
(b) Replaced- 30 employees, left and discharged- 42 employees andrecruited & joined- 18 employees
(c) Replaced- 30 employees, left and discharged- 18 employees andrecruited & joined- 42 employees
(d) Replaced- 42 employees, left and discharged- 18 employees andrecruited & joined- 30 employees

Ans: (c)

18. Mr. Ben is paid higher wages than Mr. Akon. Though their normal wage rate is same, Mr. Ben gets higher payment as under Halsey system than that to Mr. Akon as under Rowan System.
The total time allowed to make the same product is 75 hours, however, Mr. Ben takes 60 hours while Mr. Akon takes 45 hours.
The production of the product also involve other costs that are not traced directly to the product like salary to quality assurance manager, factory rent, supplies, salary to production supervisor, electricity consumed, etc. which comes to ₹ 2,26,800 leading to factory overhead rate being ₹ 120 per man- hour actually worked.
The total factory cost for the product produced by Mr. Akon comes to ₹ 1,25,640 and by Mr. Ben comes to ₹ 1,29,600.
From the information given above, COMPUTE the normal wage rate along with the cost of material. *(MTP 2 Marks Dec'24)*

(a) Normal wage rate- ₹ 63 per hour and cost of material- ₹ 1,20,240
(b) Normal wage rate- ₹ 67.5 per hour and cost of material- ₹ 1,22,400
(c) Normal wage rate- ₹ 480 per hour and cost of material- ₹ 90,000
(d) Normal wage rate- ₹ 450 per hour and cost of material- ₹ 87,840

Ans: (c)

CHAPTER 4: OVERHEADS-ABSORPTION COSTING METHOD

CONCEPTS OF THIS CHAPTER	
• Overheads: production, administrative, selling & distribution. • Allocation, apportionment, and absorption of overheads. • Under-absorption and over-absorption of overheads; apply in cost computation. • Accounting and control of administrative, selling, and distribution overheads. • Methods to calculate overhead rate.	LDR **LDR Questions** Q 12 Q 19 Q 23 Q 24

QUICK REVIEW OF IMPORTANT CONCEPTS

I. Classification of Overheads

Overheads are the expenditure which cannot be identified with a particular cost unit. Overheads can be classified as under.

By Function	By Nature,	By Element	By Control
• Factory or Manufacturing or Production Overhead	• Fixed Overheads Overhead	• Indirect Materials	• Controllable costs
• Office and Administrative Overheads	• Variable Overheads Overhead	• Indirect employee cost	• Uncontrollable costs
• Selling and Distribution Overheads	• Semi-Variable Overheads	• Indirect expenses	

II. Methods for Re-apportionment of Overheads

The re-apportionment of service department expenses over the production departments may be carried out by using any one of the following methods:

➢ Methods for Re-apportionment

• Direct re-distribution method	• Reciprocal Service method. – Simultaneous Equation method – Trial and error method – Repeated distribution method
• Step method or non-reciprocal method.	

III. The steps involved in determining of Machine hour rate is as follows:

- Step 1: Calculate total of overheads apportioned to a production department.
- Step 2: Apportion further these overheads to machines or group of machines in the department.
- Step 3: Allocate machine specific costs (directly identifiable with the machine)
- Step 4: Estimate total productive hours for the machine
- Step 5: Aggregate overheads as apportioned in step-2 and allocated in step-3 and divide it by Estimated total productive hours The resultant figure is machine hour rate
- The resultant figure is machine hour rate

Questions & Answers

Theory Questions

Question 1

EXPLAIN the treatment of over and under absorption of overheads in cost accounts.
(MTP 5 Marks Mar'24,RTP Nov'23)

Answer 1

(a) Treatment of over and under absorption of overheads are:-

(i) Writing off to costing P&L A/c: – Small difference between the actual and absorbed amount should simply be transferred to costing P&L A/c, if difference is large then investigate the causes and after that abnormal loss/ gain shall be transferred to costing P&L A/c.

(ii) Use of supplementary Rate: Under this method the balance of under and over absorbed overheads may be charged to cost of W.I.P., finished stock and cost of sales proportionately with the help of supplementary rate of overhead.

(iii) Carry Forward to Subsequent Year: Difference should be carried forward in the expectation that next year the position will be automatically corrected.

Question 2

Explain Blanket Overhead Rate and Departmental Overhead Rate. How they are calculated? State the conditions required for the application of Blanket Overhead Rate. ***(PYP 5 Marks, Jan'21, SM)***

Answer 2

Blanket Overhead Rate: Blanket overhead rate refers to the computation of one single overhead rate for the whole factory.

This overhead rate is computed as follows:

$$\text{Blanket Rate} = \frac{\text{Total overheads for the factory}}{\text{Total number of units of base for the factory}}$$

Departmental Overhead Rate: It refers to the computation of one single overhead rate for a particular production unit or department.

This overhead rate is determined by the following formula:

$$\text{Departmental overhead Rate} = \frac{\text{Overheads of department or cost centre}}{\text{Corresponding base}}$$

Conditions required for the Application of Blanket Overhead:

A blanket rate should be applied in the following cases:

(1) Where only one major product is being produced.

(2) Where several products are produced, but

(a) All products pass through all departments; and

(b) All products are processed for the same length of time in each department.

Question 3

Describe briefly idle time and explain the treatment of idle time in cost accounts in following situations:

(i) The setting up time for the machine in case of Direct Worker Mr. A.

(ii) Normal break time for lunch in case of Indirect Worker Mr. B.

(iii) Time lost due to breakdown of machine in case of Worker Mr. C. ***(PYP 4 Marks May '24)***

Answer 3

The time during which no production is carried-out because the worker remains idle but are paid. In other words, it is the difference between the time paid and the time booked. Idle time can be normal or abnormal.

Situation	Idle Time	Treatment
The setting up time for the machine in case of Direct Worker Mr. A	Normal idle time	It is treated as a part of cost of production. It is to be considered while setting of standard hours or standard rate.
Normal rest time, break time for lunch in case of Indirect Worker Mr. B	Normal idle time	It is to be considered for the computation of overhead rate.
Time lost due to break- down of machines in case of Worker Mr. C	Abnormal idle time	It is to be shown as a separate item in the Costing Profit and Loss Account.

Practical Questions

Question 4

A machine costing ₹ 10 lakhs, was purchased on 01-04-2021. The expected life of the machine is 10 years. At the end of this period its scrap value is likely to be ₹ 10,000. The total cost of all the machines including new one was ₹ 90 lakhs.

The other information is given as follows:

(i) Working hours of the machine for the year was 4,200 including 200 non-productive hours.

(ii) Repairs and maintenance for the new machine during the year was ₹ 6,000.

(iii) Insurance Premium was paid for all the machine ₹ 9,000.

(iv) New machine consumes 8 units of electricity per hour, the rate per unit being ₹ 3.75

(v) The new machine occupies $1/10^{th}$ area of the department. Rent of the department is Rs.2,400 per month.

(vi) Depreciation is charged on straight line basis.

COMPUTE machine hour rate for the new machine. *(MTP 5 Marks, Oct'21)*

Answer 4

Computation of machine hour rate of new Machine

	Total (₹)	Per hour (₹)
A. Standing Charges		
I. Insurance Premium ₹ 9,000 × $\frac{1}{9}$	1,000	
II. Rent $\frac{1}{10}$ × ₹ 2,400 ×12 months	2,880	
	3,880	**0.97***
B. Machine expenses		
I. Repairs and Maintenance (₹ 6,000 ÷ 4,000 hours)		1.50
II. Depreciation = $(\frac{10,00,000-10,000}{10 \text{ years} \times 4000 \text{ hrs}})$		24.75
III. Electricity (8 units x ₹ 3.75)		30.00
Machine hour rate		57.22

Working Note

Calculation of productive Machine hour rate

Total hours	4,200
Less: Non-Productive hours	200
Effective machine hours	4,000

* ₹ 3,880 ÷ 4,000 hours = ₹ 0.97

Question 5

SNS Trading Company has three Main Departments and two Service Departments. The data for each department is given below:

Departments Main Department:	Expenses (in ₹)	Area in (Sq. Mtr)	Number of Employees
Purchase Department	5,00,000	12	800
Packing Department	8,00,000	15	1700

Distribution Department	3,50,000	7	700
Service Departments:			
Maintenance Department	6,40,000	4	200
Personnel Department	3,20,000	6	250

The cost of Maintenance Department and Personnel Department is distributed on the basis of 'Area in Square Metres' and 'Number of Employees' respectively.

You are required to:

(i) Prepare a Statement showing the distribution of expenses of Service Departments to the Main Departments using the "Step Ladder method" of Overhead Distribution.

(ii) Compute the Rate per hour of each Main Department, given that, the Purchase Department, Packing Department and Distribution Department works for 12 hours a day, 24 hours a day and 8 hours a day respectively. Assume that there are 365 days in a year and there are no holidays.

(PYP 5 Marks Jul'21)

Answer 5

(i) **Schedule Showing the Distribution of Expenses of Service Departments using Step ladder method.**

	Main Department			Service Department	
	Purchase (₹)	Packing (₹)	Distribution (₹)	Maintenance (₹)	Personnel (₹)
Expenses	5,00,000	8,00,000	3,50,000	6,40,000	3,20,000
Distribution of Maintenance Department (12:15:7:-:6)	1,92,000	2,40,000	1,12,000	(6,40,000)	96,000
Distribution of Personnel Department (800:1700:700:-:-)	1,04,000	2,21,000	91,000	-	(4,16,000)
Total	7,96,000	12,61,000	5,53,000	-	-

(ii) **Calculation of Expenses rate per hour of Main Department**

	Purchase	Packing	Distribution
Total apportioned expenses (₹)	7,96,000	12,61,000	5,53,000
Total Hours worked	4,380 (12 x 365)	8,760 (24 x 365)	2,920 (8 x 365)
Expenses rate per hour (₹)	**181.74**	**143.95**	**189.38**

EXAM INSIGHTS: This practical problem was based on distribution of overheads by using step ladder method and calculation of rate per hour. Many examinees faced hardship to understand the concept of step ladder method; hence the overhead distribution was not done correctly leading to wrong calculation of overhead rate per hour. Performance of the examinees was below average.

Question 6

Mix Soap Pvt. Ltd., manufactures three brands of soap – Luxury, Herbal and Beauty. The following information has been obtained for the period from June 1 to June 30, 2021 relating to three brands:

	Luxury	Herbal	Beauty
Actual Production (units)	6,750	14,000	77,500
Wages paid (Rs.)	7,500	18,750	1,15,000
Raw materials consumed (Rs.)	20,000	47,000	2,40,000
Selling price per unit (Rs.)	25	15	8

Other data are:

Factory overheads	Rs. 80,000
General & administration overheads (equal for all)	Rs. 48,000
Selling overheads	20% of Works cost

If the company limits the manufacture to just one brand of soap adopting a single brand production, then

monthly production will be:

	Units
Luxury	5,000
Herbal	15,000
Beauty	30,000

Further, factory overheads are to be allocated to each brand on the basis of the units which could have been produced when single brand production was in operation.

You are required to:

(i) FIND out the Factory overhead rate for all the brands.

(ii) PREPARE a cost statement for the month of June showing the various elements of cost and also the profit earned. *(MTP 10 Marks, Apr'21)*

Answer 6

(i) Calculation of Factory overhead rate.

If the single brand production was in operation, then

1 unit of Luxury = 3 units of Herbal = 6 units of Beauty. Therefore, the factory overhead ratio in the reverse order would be 5,000:15,000: 30,000 or 1:3:6.

The overhead rate will be lowest in case of brand which will be produced in high number. Therefore, in case of Beauty soap brand, the overhead rate will be:

$$= \frac{80,000}{6\times6,750+3\times14,000+1\times77,500} = \frac{80,000}{40,500+42,000+77,500}$$

$$= \frac{80,000}{1,60,000} = 0.5$$

So, the overhead rate will be:

Luxury = 0.5 x 6 = Rs. 3

Herbal = 0.5 x 3 = Rs. 1.5

Beauty = 0.5 x 1 = Rs. 0.5

(ii) Statement of Cost of Mix Soap Pvt. Ltd. for the month of June 2021:

	Luxury (Rs.)	Herbal (Rs.)	Beauty (Rs.)	Total (Rs.)
Raw material consumed	20,000	47,000	2,40,000	3,07,000
Add: Wages paid	7,500	18,750	1,15,000	1,41,250
Prime cost	27,500	65,750	3,55,000	4,48,250
Add: Factory overheads	20,250 (Rs.3 x 6,750)	21,000 (Rs.1.5 x 14,000)	38,750 (Rs.0.5 x 77,500)	80,000
Works cost	47,750	86,750	3,93,750	5,28,250
Add: General S& administration overheads (1:1:1)	16,000	16,000	16,000	48,000
Add: Selling expenses	9,550 (Rs.47,750 x 0.20)	17,350 (Rs.86,750 x 0.20)	78,750 (Rs. 3,93,750 x 0.20)	1,05,650
Cost of sales	73,300	1,20,100	4,88,500	6,81,900
Profit (Balancing figure)	95,450	89,900	1,31,500	3,16,850
Sales	1,68,750 (Rs.25 x 6,750)	2,10,000 (Rs.15 x 14,000)	6,20,000 (Rs.8 x 77,500)	9,98,750

Question 7

M/s Avyukt Automobile Parts has four identical machines in its factory. Cost of each machine is ₹ 5,00,000 with expected scrap value of 10% at the end of its effective life (9 years). The expected annual running hours of machine is expected to run for 2,200 hours. The other details in respect of the machine shop are:

(i) Factory Rent ₹ 5,000 per month

(ii) Lighting of Factory ₹ 3,000 per month

(iii) Operator Wages (Two operators and each operator is in charge of two machines) ₹10,000 per month (per Operator)

(iv) Fixed repairs and maintenance charges per machine ₹ 2,000 per quarter

(v) Insurance premium for the machine (Annual) 3% of cost

(vi) Forman's salary (Devoted 1/6th of his time to this factory) ₹ 2,500 per month

(vii) Other factory overhead (Annual) ₹40,000

(viii) Power Consumption per machine per hour 80 units

(ix) Rate of Power ₹ 150 for 100 units

(x) Unproductive Hours lost during repairs 50 per annum

(xi) Unproductive Hours Lost while Job Setting 650 per annum

You are required to COMPUTE a comprehensive machine hour rate assuming power is used during operating time only. *(MTP 10 Marks Apr'22)*

Answer 7

Computation of Comprehensive Machine Hour Rate per Machine

Particulars	Per Annum (₹)	Per Hour (₹)
Standing Charges:		
Depreciation (Working Note 2)	50,000	
Factory Rent (₹ 5,000 x 12 months / 4)	15,000	
Lighting of Factory (₹ 3,000 x 12 months / 4)	9,000	
Operator Wages (₹ 10,000 x 12 months / 2)	60,000	
Repairs and maintenance (₹ 2,000 x 4)	8,000	
Insurance premium (₹ 5,00,000 x 3%)	15,000	
Forman's salary (₹ 2,500 x 12 x ⅙ / 4)	1,250	
Other factory overhead (₹ 40,000 / 4)	10,000	
	1,68,250	
Standing Charges per hour (₹ 1,68,250 / 1,500 hours)		112.17
Running Charges:		
Power (80 units x ₹ 150 / 100)		120.00
Comprehensive Machine Hour Rate		232.17

Working Notes:

1. Computation of Total Operative Hours

Total Running Hours:	2,200
Less: Unproductive hours lost during repairs	50
Less: Unproductive hours Lost while Job Setting	650
Total Operative Hours	**1,500 per annum**

2. Calculation of Annual Depreciation

$$\text{Annual Depreciation} = \frac{Purchase\ Cost - Estimated\ Scrap\ Value}{Effective\ life\ in\ years}$$

$$= \frac{Rs.5,00,000 - Rs.50,000}{9\ Years}$$

= Rs. 50,000

Question 8

A manufacturing unit has purchased and installed a new machine at a cost of Rs. 24,90,000 to its fleet of 5 existing machines. The new machine has an estimated life of 12 years and is expected to realize Rs. 90,000 as scrap value at the end of its working life.

Other relevant data are as follows:

(i) Budgeted working hours are 2,496 based on 8 hours per day for 312 days. Plant maintenance work is carried out on weekends when production is totally halted. The estimated maintenance hours are 416. During the production hours machine set -up and change over works are carried out. During the set-up hours no production is done. A total 312 hours are required for machine set-ups and change overs.

(ii) An estimated cost of maintenance of the machine is Rs. 2,40,000 p.a.

(iii) The machine requires a component to be replaced every week at a cost of Rs. 2,400.

(iv) There are three operators to control the operations of all the 6 machines. Each operator is paid Rs. 30,000 per month plus 20% fringe benefits.

(v) Electricity: During the production hours including set-up hours, the machine consumes 60 units per hour. During the maintenance the machine consumes only 10 units per hour. Rate of electricity per unit of consumption is Rs. 6.

(vi) Departmental and general works overhead allocated to the operation during last year was Rs. 5,00,000. During the current year it is estimated to increase by 10%.

Required: COMPUTE the machine hour rate. ***(RTP May'21)***

Answer 8

Working Note:

1. Effective machine hour:
   = Budgeted working hours – Machine Set-up time
   = 2,496 hours – 312 hours = 2,184 hours.
2. Operators' salary per annum:

Salary (3 operators × Rs.30,000 × 12 months)	Rs. 10,80,000
Add: Fringe benefits (20% of Rs.10,80,000)	Rs. 2,16,000
	Rs. 12,96,000

3. Depreciation per annum
   $\frac{Rs.24,90,000 - Rs.90,000}{12\ Years}$ = Rs. 2,00,000

Computation of Machine hour Rate

	Amount p.a. (Rs.)	Amount per hour (Rs.)
Standing charges		
Operators' Salary $\frac{Rs.12,96,000}{6\ machines} \times \frac{1}{2,184\ hours}$	12,96,000	98.90
Departmental and general overheads:		
(Rs. 5,00,000 × 110%) $\left(\frac{Rs.5,50,000}{6\ machines} \times \frac{1}{2,184\ hours}\right)$	5,50,000	41.97
(A)	18,46,000	140.87
Machine Expenses		
Depreciation $\left(\frac{Rs.2,00,000}{2,184\ hours}\right)$	2,00,000	91.58
Electricity:		
During working hours (2,496 hours × 60 units ×Rs.6)	8,98,560	411.43
During maintenance hours (416 hours × 10 units ×Rs.6)	24,960	11.43
Component replacement cost (2,400 × 52 weeks)	1,24,800	57.14
Machine maintenance cost	2,40,000	109.89
(B)	14,88,320	681.47
Machine Hour Rate (A + B)		822.34

Question 9

The following account balances and distribution of indirect charges are taken from the accounts of a manufacturing concern for the year ending on 31st March 2021

Item	Total Amount	Production Departments			Service Departments	
	(Rs.)	X (Rs.)	Y (Rs.)	Z (Rs.)	A (Rs.)	B (Rs.)
Indirect Material	2,50,000	40,000	60,000	90,000	50,000	10,000
Indirect Labour	5,20,000	90,000	1,00,000	1,40,000	1,20,000	70,000
Supervisor's Salary	1,92,000	-	-	1,92,000	-	-
Fuel & Heat	30,000					
Power	3,60,000					

Rent & Rates	3,00,000					
Insurance	36,000					
Canteen Charges	1,20,000					
Depreciation	5,40,000					

The following departmental data are also available:

	Production Departments			Service Departments	
	X	Y	Z	A	B
Area (Sq. ft.)	4,400	4,000	3,000	2,400	1,200
Capital Value of Assets (Rs.)	40,00,000	60,00,000	50,00,000	10,00,000	20,00,000
Kilowatt Hours	3,500	4,000	3,000	1,500	-
Radiator Sections	20	40	60	50	30
No. of Employees	60	70	120	30	20

Expenses charged to the service departments are to be distributed to other departments by the following percentages:

	X	Y	Z	A	B
Department A (%)	30	30	20	-	20
Department B (%)	25	40	25	10	-

PREPARE an overhead distribution statement to show the total overheads of production departments after re-apportioning service departments' overhead by using simultaneous equation method. Show all the calculations to the nearest rupee. ***(MTP 10 Marks, Mar'21) (Same concept different figures MTP 10 Marks Nov'21)***

Answer 9

Primary Distribution of Overheads

Item	Basis	Total Amount (Rs.)	Production Departments			Service Departments	
			X (Rs.)	Y (Rs.)	Z (Rs.)	A (Rs.)	B (Rs.)
Indirect Material	Actual	2,50,000	40,000	60,000	90,000	50,000	10,000
Indirect Labour	Actual	5,20,000	90,000	1,00,000	1,40,000	1,20,000	70,000
Supervisor's Salary	Actual	1,92,000	-	-	1,92,000	-	-
Fuel & Heat	Radiator Sections {2:4:6:5:3}	30,000	3,000	6,000	9,000	7,500	4,500
Power	Kilowatt Hours {7:8:6:3:-}	3,60,000	1,05,000	1,20,000	90,000	45,000	-
Rent & Rates	Area (Sq. ft.) {22:20:15:12:6}	3,00,000	88,000	80,000	60,000	48,000	24,000
Insurance	Capital Value of Assets {4:6:5:1:2}	36,000	8,000	12,000	10,000	2,000	4,000
Canteen Charges	No. of Employees {6:7:12:3:2}	1,20,000	24,000	28,000	48,000	12,000	8,000
Depreciation	Capital Value of Assets {4:6:5:1:2}	5,40,000	1,20,000	1,80,000	1,50,000	30,000	60,000
Total overheads		23,48,000	4,78,000	5,86,000	7,89,000	3,14,500	1,80,500

Re-distribution of Overheads of Service Department A and B

Total overheads of Service Departments may be distributed by simultaneous equation.

Let, the total overheads of A = a and the total overheads of B = b

a = 3,14,500 + 0.10 b (i)

or, 10a - b = 31,45,000 [(i)x10]

b = 1,80,500 + 0.20 a

or, -0.20a + b = 1,80,500 (ii)

Solving equation (i) & (ii)

10a - b = 31,45,000

-0.20a + b = 1,80,500

9.8a = 33,25,500

a = Rs. 3,39,337

Putting the value of 'a' in equation (ii), we get

b = 1,80,500 + 0.20 × 3,39,337

b = Rs. 2,48,367

Secondary Distribution of Overheads

	Production Departments		
	X (Rs.)	Y (Rs.)	Z (Rs.)
Total overhead as per primary distribution	4,78,000	5,86,000	7,89,000
Service Department A (80% of Rs.3,39,337)	1,01,801	1,01,801	67,867
Service Department B (90% of Rs.2,48,367)	62,092	99,347	62,092
Total	6,41,893	7,87,148	9,18,959

Question 10

A work-shop has 8 identical machines operated by 6 operators. The machine cannot work without an operator wholly engaged on it. The original cost of all the 8 machines works out to ₹ 64,00,000. The following particulars are furnished for a six months' period:

Normal available hours per operator	1,248
Absenteeism (without pay) hours per operator	18
Leave (with pay) hours per operator	20
Normal unavoidable idle time-hours per operator	10
Production bonus estimated	10% on wages
Power consumed	₹ 80,500
Supervision and Indirect Labour	₹ 33,000
Lighting and Electricity	₹ 12,000
Average rate of wages per day of 8 hours per operator	₹ 200
The following particulars are given for a year: Insurance	₹ 7,20,000
Sundry work Expenses	₹ 1,00,000
Management Expenses allocated	₹ 10,00,000
Depreciation	10% on the original cost

Repairs and Maintenance (including consumables): 5% of the value of all the machines.

Prepare a statement showing the comprehensive machine hour rate for the machine shop.

(MTP 10 Marks Sep'22, PYP 5 Marks Jan'21) (Same concept different figures SM)

Answer 10

Workings:

Particulars	Six months 6 operators (Hours)
Normal available hours half yearly (1,248 x 6 operators)	7,488
Less: Absenteeism hours (18 x 6 operators)	(108)
Paid hours (A)	7,380
Less: Leave hours (20 x 6 operators)	(120)
Less: Normal idle time (10 x 6 operators)	(60)
Effective working hours	**7,200**

Computation of Comprehensive Machine Hour Rate

Particulars	Amount for six months (₹)
Operators' wages (7,380/8 x200)	1,84,500
Production bonus (10% on wages)	18,450
Power consumed	80,500

Supervision and indirect labour	33,000
Lighting and Electricity	12,000
Repair and maintenance {(5% × ₹ 64,00,000)/2}	1,60,000
Insurance (₹ 7,20,000/2)	3,60,000
Depreciation {(₹ 64,00,000 × 10%)/2}	3,20,000
Sundry Work expenses (₹ 1,00,000/2)	50,000
Management expenses (₹ 10,00,000/2)	5,00,000
Total Overheads for 6 months	17,18,450
Comprehensive Machine Hour Rate = ₹ 17,18,450/7,200 hours	**₹ 238.67**

Question 11

The following particulars refer to process used in the treatment of material subsequently, incorporated in a component forming part of an electrical appliance:

(i) The original cost of the machine used (Purchased in June 2023) was ₹ 10,000. Its estimated life is 10 years, the estimated scrap value at the end of its life is ₹ 1,000, and the estimated working timeper year (50 weeks of 44 hours) is 2,200 hours of which machine maintenance etc., is estimated to take up 200 hours.

No other loss of working time expected. Setting up time, estimatedat 100 hours, is regarded as productive time. (Holiday to be ignored).

(ii) Electricity used by the machine during production is 16 units per hour at cost of a 9 paisa per unit. No current is taken during maintenance or setting up.

(iii) The machine required a chemical solution which is replaced at the end of week at a cost of ₹ 20 each time.

(iv) The estimated cost of maintenance per year is ₹ 1,800.

(v) Two attendants control the operation of machine together with five other identical machines. Their combined weekly wages, insurance and the employer's contribution to holiday pay amount ₹ 120.

(vi) Departmental and general works overhead allocated to this machine for the current year amount to ₹ 3,000.

You are required to CALCULATE the machine hour rate of operating the machine.

(MTP 6 Marks July'24 & Apr'21) (RTP Nov'23)

Answer 11

Working Notes:

(i) Total Productive hours = Estimated Working hours − Machine Maintenance hours
= 2,200 hours − 200 hours = 2,000 hours

(ii) Depreciation per annum = $\frac{₹10,000 - ₹1000}{10\ years}$ = ₹ 900

(iii) Chemical solution cost per annum = ₹ 20 × 50 weeks = ₹ 1,000

(iv) Wages of attendants (per annum) = $\frac{₹120X\ 50\ Weeks}{6\ Machines}$ = ₹ 1,000

Calculation of Machine hour rate

Particulars	**Amount (per annum)**	**Amount (per hour)**
A. Standing Charge		
(i) Wages of attendants	1,000	
(ii) Departmental and general works overheads	3,000	
Total Standing Charge	4,000	
Standing Charges per hour $\left(\frac{4,000}{2,000}\right)$		2.0
B. Machine Expense		
(iii) Depreciation	900	0.45
(iv) Electricity $\left(\frac{₹0.09\times16units\times1,900hours}{2,000hours}\right)$	-	1.37

(v) Chemical solution	1,000	0.50
(vi) Maintenance cost	1,800	0.90
Machine operating cost per hour (A + B)		5.22

Question 12

LDR

Vivi Ltd. manufactures a single product. It recovers factory overheads at a pre - determined rate of ₹ 20 per man-day.

During the year 2020-21, the total factory overheads incurred and the man-days actually worked were ₹ 35.50 lakhs and 1.50 lakh days respectively. Out of the amount of ₹ 35.50 lakhs, ₹ 2.00 lakhs were in respect of wages for strike period and ₹ 1.00 lakh was in respect of expenses of previous year booked in this current year. During the period, 50,000 units were sold. At the end of the period, 12,000 completed units were held in stock but there was no opening stock of finished goods. Similarly, there was no stock of uncompleted units at the beginning of the period but at the end of the period there were 20,000 uncompleted units which may be treated as 65% complete in all respects.

On investigation, it was found that 40% of the unabsorbed overheads were due to factory inefficiency and the rest were attributable to increase in the cost of indirect materials and indirect labour. You are required to:

(i) Calculate the amount of unabsorbed overheads during the year 2020 -21.

(ii) Show the accounting treatment of unabsorbed overheads in cost accounts and pass journal entry.

(PYP 10 Marks Dec'21)

Answer 12

(i) Amount of under-absorption of overheads during the year 2020-21

		(₹)
Total production overheads actually incurred during the year 2020-21		35,50,000
Less: Wages paid during strike period	₹2,00,000	
Wages of previous year booked in current year	₹ 1,00,000	3,00,000
Net production overheads actually incurred: (A)		32,50,000
Production overheads absorbed by 1.50 lakh man-days @ ₹ 20 per man-day: (B)		30,00,000
Amount of under-absorption of production overheads: [(A)–(B)]		2,50,000

(ii) Accounting treatment of under absorption of production overheads: It is given in the statement of the question that 62,000 units (50,000 sold + 12,000 closing stock – 0 opening stock) were completely finished and 20,000 units were 65% complete, 40% of the under-absorbed overheads were due to factory inefficiency and the rest were attributable to increase in cost of indirect materials and indirect labour.

	(₹)
1. (40% of ₹2,50,000) i.e. ₹ 1,00,000 of under – absorbed overheads were due to factory inefficiency. This being abnormal, should be debited to the Costing Profit and Loss A/c	1,00,000
2. Balance (60% of ₹ 2,50,000) i.e. ₹ 1,50,000 of under – absorbed overheads should be distributed over work-in- progress, finished goods and cost of sales by using supplementary rate	1,50,000
Total under-absorbed overheads	2,50,000

Apportionment of unabsorbed overheads of ₹1,50,000 over work-in-progress, finished goods and cost of sales.

	Equivalent Completed units	(₹)
Work-in-progress (13,000 units × ₹ 2) (Refer to Working Note)	20000 * 65% = 13,000	26,000
Finished goods (12,000 units × ₹ 2)	12,000	24,000
Cost of sales (50,000 units × ₹ 2)	50,000	1,00,000
	75,000	1,50,000

Journal entry:

Work-in-progress control A/c	Dr.	₹ 26,000
Finished goods control A/c	Dr.	₹ 24,000

Cost of Sales A/c	Dr.	₹ 1,00,000	
Costing Profit & Loss A/c	Dr.	₹ 1,00,000	
To Overhead control A/c			₹ 2,50,000

Working Note:

Supplementary overhead absorption rate = $\frac{Rs.1,50,000}{75,000\ units}$ = Rs. 2 per unit

EXAM INSIGHTS: The question tested the knowledge of examinees on the treatment of unabsorbed Overheads in cost accounting. Examinees had to calculate unabsorbed overheads and pass journal entry after allocating them to Cost of Sales, WIP, and Finished stock by using supplementary rate. Performance of the examinees was above average.

Question 13

USP Ltd. is the manufacturer of 'double grip motorcycle tyres'. In the manufacturing process, it undertakes three different jobs namely, Vulcanising, Brushing and Striping. All of these jobs require the use of a special machine and also the aid of a robot when necessary. The robot is hired from outside and the hire charges paid for every six months is₹ 2,70,000. An estimate of overhead expenses relating to the special machine is given below:

- **Rent for a quarter is ₹ 18,000.**
- **The cost of the special machine is ₹ 19,20,000 and depreciation is charged @10% per annum on straight line basis.**
- **Other indirect expenses are recovered at 20% of direct wages.**

The factory manager has informed that in the coming year, the total direct wages will be ₹ 12,00,000 which will be incurred evenly throughout the year.

During the first month of operation, the following details are available from the job book: Number of hours the special machine was used

Jobs	Without the aid of the robot	With the of the robot
Vulcanising	500	400
Brushing	1000	400
Striping	-	1200

You are required to:

(i) Compute the Machine Hour Rate for the company as a whole for a month (A) when the robot is used and (B) when the robot is not used.

(ii) Compute the Machine Hour Rate for the individual jobs i.e. Vulcanising, Brushing and Striping.

(PYP 10 Marks Nov'22,SM)

Answer 13

Working notes:

(I)	Total machine hours use (500 + 1,000 + 400 + 400 + 1,200)	3,500
(II)	Total machine hours without the use of robot (500 + 1,000)	1,500
(III)	Total machine hours with the use of robot (400 + 400 + 1,200)	2,000
(IV)	Total overheads of the machine per month	
	Rent (₹ 18,000 ÷ 3 months)	6,000
	Depreciation [(₹ 19,20,000 x 10%) ÷ 12 months]	16,000
	Indirect expenses [(₹ 12,00,000 x 20%) ÷ 12 months]	20,000
	Total	42,000
(V)	Robot hire charges for a month (₹ 2,70,000 ÷ 6 months)	₹ 45,000

(VI) Overheads for using machines without robot

$= \frac{Rs.42,000}{3,500\ hrs.}$ X 1,500 hrs. = Rs. 18,000

(VII) Overheads for using machines with robot

$= \frac{Rs.42,000}{3,500\ hrs.}$ X 2,000 hrs. + ₹ 45,000 = Rs. 69,000

(i) Computation of Machine hour rate for the firm as a whole for a month

(A) When the robot was used : $\frac{Rs.69,000}{2,000\ hours}$ = Rs. 34.50 per hour

(B) When the robot was not used : $\frac{Rs.18,000}{1500\ hours}$ = Rs. 12 Per hour

(ii) Computation of Machine hour rate for the individual job

	Rate per hour	Job					
		Vulcanizing		Brushing		Striping	
	(₹)	Hrs.	(₹)	Hrs.	(₹)	Hrs.	(₹)
Overheads							
Without robot	12.00	500	6,000	1,000	12,000	-	-
With robot	34.50	400	13,800	400	13,800	1,200	41,400
Total		900	19,800	1,400	25,800	1,200	41,400
Machine hour rate			22		18.43		34.50

EXAM INSIGHTS: This is a Numerical question on absorption costing for the calculation of Machine Hour Rate (MHR). Part one required computation of MHR for the company as a whole while part two required calculation of MHR for the individual jobs. Most of the examinees made mistakes in calculation of total overheads. Overall performance of the examinees was **poor.**

Question 14

The cost variance report was being discussed at a review meeting where in Cost Accountant of the company reported under-absorption of production overheads.

The following information was available from the cost records of the company at the end of financial year 2023-24:

- **Actual production overheads incurred were ₹ 4,50,000 which included ₹ 42,000 on account of 'written off obsolete stores.**
- **18,000 units were produced during the year out of which 10,000 units were sold and 8,000 units of finished goods were in stock.**
- **There were also 5,000 units in progress which may be reckoned as 40% complete.**
- **The actual machine hours worked during the period were 43,000.**

ABC Ltd. absorbs the production overheads at a predetermined rate of ₹ 8 per machine hour.

On investigation, it has been found that 20% of the under-absorption of production overheads was due to defective planning and the rest was attributable to normal increase in costs of indirect materials and indirect labour.

You are required to:

(i) Calculate the amount of under-absorption of production overheads during the year 2023-24; and

(ii) Show the treatment of under-absorption of production overheads in cost accounts.

(PYP 6 Marks May '24)

Answer 14

(i) Amount of under-absorption of production overheads during the current year

Total production overheads actually incurred during the current year	4,50,000
Less : 'Written off' obsolete stores	42,000
Net production overheads actually incurred : **(A)**	4,08,000
Production overheads absorbed by 43,000 machine	
hours@ ₹ 8 per hour : **(B)**	3,44,000
Amount of under – absorption of production overheads :	

[(A) – (B)]	64,000

(ii) Accounting treatment of under absorption of production overheads

It is given in the statement of the question that 18,000 units were produced, and 5,000 units were 40% complete, 20% of the under- absorbed overheads were due to defective planning and the rest were attributable to normal increase in costs of indirect materials and indirect labour.

1.	(20 % of ₹ 64,000) i.e., ₹ 12,800 of under-absorbed overheads were due to defective planning. This being abnormal, should be debited to the Costing Profit and Loss A/c.	₹ 12,800
2.	Balance (80% of ₹ 64,000) i.e., ₹ 51,200 of under-absorbed overheads should be distributed over work-in-progress, finished goods and cost of sales by using supplementary rate.	₹ 51,200
	Total under-absorbed overheads	₹ 64,000

Apportionment of unabsorbed overheads of ₹ 51,200 over, work-in progress, finished goods and cost of sales

	Equivalent Completed Units	(₹)
Work-in-Progress		
(5,000 units × 40%×₹ 2.56)	2,000	5,120
(Refer to working note)		
Finished goods		
(8,000 units × ₹ 2.56)	8,000	20,480
Cost of sales		
(10,000 units × ₹ 2,56)	10,000	25,600
	20,000	51,200

Working Note

Supplementary rate per unit = $\frac{51,200}{2330,000}$ = ₹ 2.56

Question 15

From the details furnished below you are required to compute a comprehensive machine-hour rate:

Original purchase price of the machine (subject to depreciation at 10% per annum on original cost)	**₹ 12,96,000**
Normal working hours for the month (The machine works for only 75% of normal capacity)	**200 hours**
Wages to Machine-man	**₹ 800 per day (of 8 hours)**
Wages to Helper (machine attendant)	**₹ 500 per day (of 8 hours)**
Power cost for the month for the time worked	**₹ 1,30,000**
Supervision charges apportioned for the machine centre for the month	**₹ 18,000**
Electricity & Lighting (fixed in nature) for the month	**₹ 9,500**
Repairs & maintenance (machine) including consumable stores per month	**₹ 17,500**
Insurance of Plant & Building (apportioned) for the year	**₹ 18,000**
Other general expense per annum	**₹ 18,000**

The workers are paid a fixed dearness allowance of ₹ 4,500 per month. Production bonus payable to workers in terms of an award is equal to 10% of basic wages and dearness allowance. Add 10% of the basic wage and dearness allowance against leave wages and holidays with pay to arrive at a comprehensive labour-wage for debit to production. ***(RTP Sep'24,MTP 10 Marks, Mar'19 & Sep'23)***

Answer 15

Effective machine hours = 200 hours × 75% = 150 hours

Computation of Comprehensive Machine Hour Rate

	Per month (₹)	Per hour (₹)
Fixed cost		
Supervision charges	18,000.00	

Electricity and lighting	9,500.00	
Insurance of Plant and building (₹ 18,000 ÷12)	1,500.00	
Other General Expenses (₹ 18,000÷12)	1,500.00	
Depreciation (₹ 1,29,600÷12)	10,800.00	
	41,300.00	275.33
Direct Cost		
Repairs and maintenance	17,500.00	116.67
Power	1,30,000.00	866.67
Wages of machine man		196.00
Wages of Helper		136.00
Machine Hour rate (Comprehensive)		**1,590.67**

Wages per machine hour

	Machine man	Helper
Wages for 200 hours		
Machine-man (₹ 800 × 25)	₹ 20,000.00	---
Helper (₹ 500 × 25)	---	₹ 12,500.00
Dearness Allowance (DA)	₹ 4,500.00	₹ 4,500.00
	₹ 24,500.00	₹ 17,000.00
Production bonus (10% of Basic and DA)	2,450.00	1,700.00
Leave wages (10% of Basic and DA)	2,450.00	1,700.00
	29,400.00	20,400.00
Effective wage rate per machine hour	196.00	136.00

Question 16

Shanu Ltd has calculated a predetermined overhead rate of ₹ 22 per machine hour for its Quality Check (QC) department. This rate has been calculated for the budgeted level of activity and is considered as appropriate for absorbing overheads. The following overhead expenditures at various activity levels had been estimated.

Total overheads	Number of machine hours
₹ 3,38,875	14,500
₹ 3,47,625	15,500
₹ 3,56,375	16,500

You are required to:

(i) CALCULATE the variable overhead absorption rate per machine hour.

(ii) CALCULATE the estimated total fixed overheads.

(iii) CALCULATE the budgeted level of activity in machine hours.

(iv) CALCULATE the amount of under/over absorption of overheads if the actual machine hours were 14,970 and actual overheads were ₹ 3,22,000.

(v) STATE the arguments for and against using departmental absorption rates as opposed to a single or blanket factory wide rate. ***(MTP 5 Marks Dec'24 & Oct'22, MTP May'20, Apr'19)***

Answer 16

(i) Variable overhead absorption rate = $\frac{\text{Diffrence in Total overheads}}{\text{Diffrenceinlevels interms of machine hours}}$

$= \frac{₹3,47,625 - ₹3,38,875}{15,500 \text{ hours} - 14,500 \text{ hours}}$ = ₹8.75 per machine hour.

(ii) Calculation of Total fixed overheads:

	(₹)
Total overheads at 14,500 hours	3,38,875
Variable overheads = ₹ 8.75 × 14,500	1,26,875
Total fixed overheads	2,12,000

(iii) Calculation of Budgeted level of activity in machine hours:

Let budgeted level of activity = X

Then $\frac{(₹ 8.75\,X + ₹2,12,000)}{X}$ = ₹22

8.75X + ₹ 2,12,000 = 22X

13.25X = 2,12,000

X =16,000

Thus, budgeted level of activity = 16,000 machine hours.

(iv) Calculation of Under / Over absorption of overheads:

	(₹)
Actual overheads	3,22,000
Absorbed overheads = 14,970 hours × ₹ 22 per hour	3,29,340
Over-absorption (3,29,340 – 3,22,000)	7,340

(v) Departmental absorption rates provide costs which are more precise than those provided by the use of blanket absorption rates. Departmental absorption rates facilitate variance analysis and cost control. The application of these rates makes the task of stock and work-in-process (WIP) valuation easier and more precise. However, the setting up and monitoring of these rates can be time-consuming and expensive.

Question 17

MST Limited has collected the following data for its two activities. It calculates activity cost rates based on cost driver capacity.

Activity	Cost Driver	Capacity	Cost (Rs.)
Power	Kilowatt hours	50,000 kilowatt hours	40,00,000
Quality Inspections	Number of Inspections	10,000 Inspections	60,00,000

The company makes three products M, S and T. For the year ended March 31, 20X9, the following consumption of cost drivers was reported:

Product	Kilowatt hours	Quality Inspections
M	10,000	3,500
S	20,000	2,500
T	15,000	3,000

Required:

(i) PREPARE a statement showing cost allocation to each product from each activity.

(ii) CALCULATE the cost of unused capacity for each activity.

(iii) STATE the factors the management considers in choosing a capacity level to compute the budgeted fixed overhead cost rate. ***(RTP May'19) (Same concept different figures SM,MTP 4 Marks Apr'24)***

Answer 17

(i) Statement of cost allocation to each product from each activity

	Product			
	M (Rs.)	**S (Rs.)**	**T (Rs.)**	**Total (Rs.)**
Power (Refer to working note)	8,00,000 (10,000 kWh × Rs.80)	16,00,000 (20,000 kWh × Rs.80)	12,00,000 (15,000 kWh × Rs.80)	36,00,000
Quality Inspections (Refer to working note)	21,00,000 (3,500 inspections × Rs.600)	15,00,000 (2,500 inspections × Rs.600)	18,00,000 (3,000 inspections × Rs.600)	54,00,000

Working Note:

Rate per unit of cost driver:

Power : (Rs.40,00,000 ÷ 50,000 kWh) = Rs.80/kWh

Quality Inspection : (Rs.60,00,000 ÷ 10,000 inspections) = Rs.600 per inspection

(ii) Calculation of cost of unused capacity for each activity:

	(Rs.)
Power (Rs.40,00,000 – Rs.36,00,000)	4,00,000
Quality Inspections (Rs.60,00,000 – Rs.54,00,000)	6,00,000
Total cost of unused capacity	10,00,000

(iii) **Factors management consider in choosing a capacity level to compute the budgeted fixed overhead cost rate:**

- Effect on product costing & capacity management
- Effect on pricing decisions.
- Effect on performance evaluation
- Effect on financial statements
- Regulatory requirements.
- Difficulties in forecasting for any capacity level.

Question 18

Pretz Ltd. is a manufacturing company having two production departments, 'A' & 'B' and two service departments 'X' & 'Y'. The following is the budget for March, 2022:

	Total (₹)	A (₹)	B (₹)	X (₹)	Y (₹)
Direct material		2,00,000	4,00,000	4,00,000	2,00,000
Direct wages		10,00,000	4,00,000	2,00,000	4,00,000
Factory rent	9,00,000				
Power (Machine)	5,10,000				
Depreciation	2,00,000				
General Lighting	3,00,000				
Perquisites	4,00,000				
Additional information:					
Area (Sq. ft.)		500	250	250	500
Capital value of assets (₹ lakhs)		40	80	20	20
Light Points		10	20	10	10
Machine hours		1,000	2,000	1,000	1,000
Horse power of machines		50	40	15	25

A technical assessment of the apportionment of expenses of service departments is as under:

	A	B	X	Y
Service Dept. 'X' (%)	55	25	–	20
Service Dept. 'Y' (%)	60	35	5	–

You are required to:

(a) PREPARE a statement showing distribution of overheads to various departments.

(b) PREPARE a statement showing re-distribution of service departments expenses to production departments using-

(i) Simultaneous equation method

(ii) Trial and error method

(iii) Repeated Distribution Method. *(RTP May'22)*

Answer 18

(a) Primary Distribution of Overheads

	Basis	Total (₹)	A (₹)	B (₹)	X (₹)	Y (₹)
Direct materials	Direct	6,00,000	–	–	4,00,000	2,00,000
Direct wages	Direct	6,00,000	–	–	2,00,000	4,00,000
Factory rent(2:1:1:2)	Area	9,00,000	3,00,000	1,50,000	1,50,000	3,00,000
Power (Machine) (10:16:3:5)*	H.P. × Machine Hrs.	5,10,000	1,50,000	2,40,000	45,000	75,000
Depreciation(2:4:1:1)	Capital value	2,00,000	50,000	1,00,000	25,000	25,000
General Lighting (1:2:1:1)	Light Points	3,00,000	60,000	1,20,000	60,000	60,000
Perquisites (5:2:1:2)	Direct Wages	4,00,000	2,00,000	80,000	40,000	80,000
		35,10,000	**7,60,000**	**6,90,000**	**9,20,000**	**11,40,000**

*{(1000×50) : (2000×40) : (1000×15) : (1000×25)}

(50000 : 80000 : 15000 : 25000)

(10 : 16 : 3 : 5)

(b) (i) Redistribution of Service Department's expenses using 'Simultaneous equation method'

X	=	9,20,000 + 0.05 Y
Y	=	11,40,000 + 0.20 X

Substituting the value of X,

Y = 11,40,000 + 0.20 (9,20,000 + 0.05 Y)

= 13,24,000 + 0.01 Y

Y - 0.01Y = 13,24,000

Y = 13,24,000 / 0.99

Y = ₹ 13,37,374

The total expense of **Y is ₹ 13,37,374** and that of **X is ₹ 9,86,869** i.e.,₹ 9,20,000 + (0.05 × ₹ 13,37,374).

Distribution of Service departments' overheads to Production departments

	Production Departments	
	A (₹)	**B (₹)**
Overhead as per primary distribution	7,60,000	6,90,000
Dept- X (55% and 25% of ₹ 9,86,869)	5,42,778	2,46,717
Dept- Y (60% and 35% of ₹ 13,37,374)	8,02,424	4,68,081
	21,05,202	**14,04,798**

(ii) Redistribution of Service Department's expenses using 'Trial and Error Method':

	Service Departments	
	X (₹)	**Y (₹)**
Overheads as per primary distribution	9,20,000	11,40,000
(i) Apportionment of Dept-X expenses to Dept-Y (20% of ₹ 9,20,000)	---	1,84,000
	---	13,24,000
(ii) Apportionment of Dept-Y expenses to Dept-X (5% of ₹ 13,24,000)	66,200	---
(i) Apportionment of Dept-X expenses to Dept-Y (20% of ₹ 66,200)	---	13,240
(ii) Apportionment of Dept-Y expenses to Dept-X(5% of ₹ 13,240)	662	---
(i) Apportionment of Dept-X expenses to Dept-Y (20% of ₹ 662)		132
(ii) Apportionment of Dept-Y expenses to Dept-X (5% of ₹ 132)	7	
Total	**9,86,869**	**13,37,372**

Distribution of Service departments' overheads to Production departments

	Production Departments	
	A (₹)	**B (₹)**
Overhead as per primary distribution	7,60,000	6,90,000
Dept- X (55% and 25% of ₹ 9,86,869)	5,42,778	2,46,717
Dept- Y (60% and 35% of ₹ 13,37,372)	8,02,423	4,68,080
	21,05,201	**14,04,797**

(iii) Redistribution of Service Department's expenses using 'repeated distribution method':

	A (₹)	B (₹)	X (₹)	Y (₹)
Overhead as per primary distribution	7,60,000	6,90,000	9,20,000	11,40,000
Dept.X overhead apportioned in the ratio (55:25:—:20)	5,06,000	2,30,000	(9,20,000)	1,84,000
Dept. Y overhead apportioned in the ratio (60:35:5: —)	7,94,400	4,63,400	66,200	(13,24,000)
Dept. X overhead apportioned in the ratio (55:25:—:20)	36,410	16,550	(66,200)	13,240
Dept. Y overhead apportioned in the ratio (60:35:5: —)	7,944	4,634	662	(13,240)
Dept. X overhead apportioned in the ratio (55:25:—:20)	364	166	(662)	132

Dept. Y overhead apportioned in the ratio (60:35:5: —)	79	46	7	(132)
Dept.X overhead apportioned in the ratio (55:25:—:20)	4	3	(7)	-
	21,05,201	**14,04,799**	-	-

Question 19

LDR

SE Limited manufactures two products- A and B. The company had budgeted factory overheads amounting to ₹ 36,72,000 and budgeted direct labour hour of 1,80,000 hours. The company uses pre-determined overhead recovery rate for product costing purposes.

The department-wise break-up of the overheads and direct labour hours were as follows:

Particulars	Budgeted overheads	Budgeted direct labour hours	Rate per direct labour hour
Department Pie	₹ 25,92,000	90,000 hours	₹ 28.80
Department Qui	₹ 10,80,000	90,000 hours	₹ 12.00
Total	₹ 36,72,000	1,80,000 hours	

Additional Information:

Each unit of product A requires 4 hours in department Pie and 1 hour in department Qui. Also, each unit of product B requires 1 hour in department Pie and 4 hours in department Qui.

This was the first year of the company's operation. There was no WIP at the end of the year. However, 1,800 and 5,400 units of Products A and B were on hand at the end of the year.

The budgeted activity has been attained by the company. You are required to:

(i) **DETERMINE the production and sales quantities of both products 'A' and 'B' for the above year.**

(ii) **ASCERTAIN the effect of using a pre-determined overhead rate instead of department-wise overhead rates on the company's income due to its effect on stock value.**

(iii) **CALCULATE the difference in the selling price due to the use of pre-determined overhead rate instead of using department-wise overhead rates. Assume that the direct costs (material and labour costs) per unit of products A and B were ₹ 25 and ₹ 40 respectively and the selling price is fixed by adding 40% over and above these costs to cover profit and selling and administration overhead.** ***(RTP Nov'22)***

Answer 19

i. Computation of production and sales quantities:

The products processing times are as under –

Product	A	B	Total
Department Pie	4 hours	1 hour	90,000 hours
Department Qui	1 hour	4 hours	90,000 hours

Let X and Y be the number of units (production quantities) of the two products.

Converting these into equations, we have –

4X + Y = 90,000 &

X + 4Y = 90,000

Solving the above, we get X = 18,000; Y = 18,000

Hence, the Production and Sales Quantities are determined as under –

Product	Production Quantity	Closing Stock (Given)	Sales Quantity (Balancing Figure)
A	18,000 units	1,800 units	16,200 units
B	18,000 units	5,400 units	12,600 units

ii. Effect of using pre-determined rate of overheads on the company's profit

Product	Closing Stock Quantity	Overhead included using pre-determined rate	Overhead included using department rate	Difference in overhead in closing stock value / Effect on closing stock value
A	1,800 units	1,800 x 5 hours x ₹ 20.40 = ₹ 1,83,600	Pie = 1,800 units x 4 hours x ₹ 28.80 = ₹ 2,07,360 Qui = 1,800 units x 1 hour x	**(-) ₹ 45,360**

			₹ 12 = ₹ 21,600	
B	5,400 units	5,400 x 5 hours x ₹ 20.40 = ₹ 5,50,800	Pie = 5,400 units x 1 hour x ₹ 28.80 = ₹ 1,55,520	**(+) ₹ 1,36,080**
			Qui = 5,400 units x 4 hours x ₹12 = ₹ 2,59,200	
Total		₹ 7,34,400	₹ 6,43,680	**(+) ₹ 90,720**

Use of pre-determined overhead rate has resulted in over valuation of stock by ₹ 90,720 due to which the company's income would be affected (increase) by ₹ 90,720. Profit would be affected only to the extent of Overhead contained in closing finished goods and closing WIP, if any.

iii. Effect of using pre-determined on the products' selling prices

Particulars	Product A	Product B
Selling Price per unit if pre-determined overhead rate is used	₹177.80	₹ 198.80
Selling Price per unit if department wise rate is used	₹ 213.08	₹163.52
Difference	₹ 35.28	₹ 35.28
	Under-Priced	Over-Priced

Workings:

1. **Pre-determined overhead recovery rate** = $\frac{₹36,72,000}{1,80,000\ hours}$ = ₹ 20.40 per direct labour hour

2. **If pre-determined recovery rate is used**

Particulars	Product A in ₹	Product B in ₹
Materials & Labour	25.00	40.00
Add: Production Overhead A = 5 hours x ₹ 20.40 per hour B = 5 hours x ₹ 20.40 per hour	102.00	102.00
Cost of production	127.00	142.00
Add: 40% of margin	50.80	56.80
	177.80	198.50

3. **If department-wise recovery rate is used**

Particulars	Product A in ₹	Product B in ₹
Materials & Labour	25.00	40.00
Add: Production Overhead	127.20	76.80
A = Pie = 4 hours x ₹ 28.80 Qui = 1 hour x ₹ 12 B = Pie = 1 hour x ₹ 28.80 Qui = 4 hours x ₹ 12		
Cost of production	152.20	116.80
Add: 40% of margin	60.88	46.72
Selling Price per unit	213.08	163.52

Question 20

SANDY Ltd. is a manufacturing company having three production departments, 'A', 'B' and 'C' and two service departments 'X' and 'Y'. The following is the budget for December 2022:

	Total (₹)	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Direct material		1,60,000	3,20,000	6,40,000	3,20,000	1,60,000
Direct wages		8,00,000	3,20,000	12,80,000	1,60,000	3,20,000
Factory rent	6,40,000					
Power	4,00,000					

Depreciation	1,60,000					
Other overheads	14,40,000					
Additional information:						
Area (Sq. ft.)		800	400	800	400	800
Capital value of assets (₹) lakhs)		32	64	32	16	16
Machine hours		1,600	3,200	6,400	1,600	1,600
Horsepower of machines		80	64	32	24	40

Apportionment of expenses of service departments is as under:

	A	B	C	X	Y
Service Dept. 'X'	72	24	48	–	16
Service Dept. 'Y'	96	56	–	8	–

Required:

(i) PREPARE a statement showing distribution of overheads to various departments.

(ii) PREPARE a statement showing re-distribution of service departments expenses to production departments using Repeated Distribution method. Also CALCULATE machine hour rate of the production departments 'A', 'B', 'C'. *(RTP May'23)*

Answer 20

(i) Overhead Distribution Summary

	Basis	Total (₹)	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Direct materials	Direct	–	–	–	–	3,20,000	1,60,000
Direct wages	Direct	–	–	–	–	1,60,000	3,20,000
Factory rent (2:1:2:1:2)	Area	6,40,000	1,60,000	80,000	1,60,000	80,000	1,60,000
Power (10:16:16:3:5)*	H.P. × Machine Hrs.	4,00,000	80,000	1,28,000	1,28,000	24,000	40,000
Depreciation (2:4:2:1:1)	Capital value of assets	1,60,000	32,000	64,000	32,000	16,000	16,000
Other overheads (1:2:4:1:1)	Machine hrs.	14,40,000	1,60,000	3,20,000	6,40,000	1,60,000	1,60,000
Total		26,40,000	4,32,000	5,92,000	9,60,000	7,60,000	8,56,000

*{(1600×80) : (3200×64) : (6400×32) : (1600×24) : (1600×40)}
(1,28,000 : 2,04,800 : 2,04,800 : 38,400 : 64,000)
(10:16:16:3:5)

(ii) Redistribution of service department's expense using repeated distribution Method:

	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Total overheads	4,32,000	5,92,000	9,60,000	7,60,000	8,56,000
Dept. X overhead apportioned in the ratio (72:24:48: —:16)	3,42,000	1,14,000	2,28,000	-7,60,000	76,000
Dept. Y overhead apportioned in the ratio (96:56: —:8: —)	5,59,200	3,26,200	-	46,600	-9,32,000
Dept. X overhead apportioned in the ratio (72:24:48: —:16)	20,970	6,990	13,980	-46,600	4,660
Dept. Y overhead apportioned in the ratio (96:56: —:8: —)	2,796	1,631	-	233	-4,660
Dept. X overhead apportioned in the ratio (72:24:48: —:16)	105	35	70	-233	23

Dept. Y overhead apportioned in the ratio (96:56: —:8: —)	15	8	-	-	-23
	13,57,086	10,40,864	12,02,050	-	-

Calculation of machine hour rate

		A	B	C
A	Total overheads (₹)	13,57,086	10,40,864	12,02,050
B	Machine hours	1,600	3,200	6,400
C	**Machine hour rate (₹) [A ÷ B]**	**848.18**	**325.27**	**187.82**

Question 21

V Ltd. manufactures luggage trolleys for airports. The factory, in which the company undertakes all of its S production, has two production departments- 'Fabrication' and 'Assembly', and two service departments- 'Stores' and 'Maintenance'.

The following information have been extracted from the company's budget for the financial year ended 31st March, 2019:

Particulars		**Rs.**
Allocated Overhead Costs Fabrication Department		15,52,000
Assembly Department		7,44,000
Stores Department		2,36,000
Maintenance Department		1,96,000
Other Overheads		
Factory rent		15,28,000
Factory building insurance		1,72,000
Plant & machinery insurance		1,96,000
Plant & Machinery Depreciation		2,65,000
Subsidy for staffs' canteen		4,48,000
Direct Costs	**Rs.**	**Rs.**
Fabrication Department:		
Material	63,26,000	
Labour	8,62,000	71,88,000
Assembly Department:		
Material	1,42,000	
Labour	13,06,000	14,48,000

The following additional information is also provided:

	Fabrication Department	Assembly Department	Stores Department	Maintenance Department
Floor area (square meters)	24,000	10,000	2,500	3,500
Value of plant & machinery (Rs.)	16,50,000	7,50,000	75,000	1,75,000
No. of stores requisitions	3,600	1,400	-	-
Maintenance hours required	2,800	2,300	400	-
No. of employees	120	80	38	12
Machine hours	30,00,000	60,000		
Labour hours	70,000	26,00,000		

Required:

(i) **PREPARE a table showing the distribution of overhead costs of the two service departments to the two production departments using step method; and**

(ii) **Calculate the most appropriate overhead recovery rate for each department.**

(iii) **Using the rates calculated in part (ii) above, CALCULATE the full production costs of the following job order:**

Job number IGI2019

Direct Materials	**Rs. 2,30,400**
Direct Labour:	
Fabrication Department	**240 hours @ Rs. 50 per hour**
Assembly Department	**180 hours @ Rs. 50 per hour**
Machine hours required:	
Fabrication Department	**210 hours**
Assembly Department	**180 hours** ***(MTP Oct'19 & Apr'23 10 Marks)***

Answer 21

(i) Table of Primary Distribution of Overheads

Particulars	Basis of Apportionment	Total Amount	Production Department		Service Departments	
			Fabrication	Assembly	Stores	Maintenance
Overheads Allocated		27,28,000	15,52,000	7,44,000	2,36,000	1,96,000
Direct Costs	Actual	86,36,000	71,88,000	14,48,000	—	—
Other Overheads:						
Factory rent	Floor Area (48:20:5:7)	15,28,000	9,16,800	3,82,000	95,500	1,33,700
Factory building insurance	Floor Area (48:20:5:7)	1,72,000	1,03,200	43,000	10,750	15,050
Plant & Machinery insurance	Value of Plant & Machinery (66:30:3:7)	1,96,000	1,22,038	55,472	5,547	12,943
Plant & Machinery Depreciation	Value of Plant & Machinery (66:30:3:7)	2,65,000	1,65,000	75,000	7,500	17,500
Canteen Subsidy	No. of Employees (60:40:19:6)	4,48,000	2,15,040	1,43,360	68,096	21,504
		1,39,73,000	1,02,62,078	28,90,832	4,23,393	3,96,697

Re-distribution of Service Departments' Expenses:

Particulars	Basis of Apportionment	Production Department		Service Departments	
		Fabrication	Assembly	Stores	Maintenance
Overheads as per Primary distribution	As per Primary distributior	1,02,62,078	28,90,832	4,23,393	3,96,697
Maintenance Department Cost	Maintenance Hours (28:23:4:-)	2,01,955	1,65,891	28,851	(3,96,697)
		1,04,64,033	30,56,723	4,52,244	—
Stores Department	No. of Stores Requisition (18:7:-:-)	3,25,616	1,26,628	(4,52,244)	
		1,07,89,649	31,83,351	—	—

(ii) Overhead Recovery Rate

Department	Apportioned Overhead (Rs.) (I)	Basis of Overhead Recovery Rate (II)	Overhead Recovery Rate (Rs.) [(I) ÷ (II)]
Fabrication	1,07,89,649	30,00,000 Machine Hours	3.60 per Machine Hour
Assembly	31,83,351	26,00,000 Labour Hours	1.22 per Labour Hour

(iii) Calculation of full production costs of Job no. IGI2019.

Particulars	Amount (Rs.)
Direct Materials	2,30,400
Direct Labour:	
Fabrication Deptt. (240 hours × Rs.50)	12,000
Assembly Deptt. (180 hours × Rs.50)	9,000
Production Overheads:	
Fabrication Deptt. (210 hours × Rs. 3.60)	756
Assembly Deptt. (180 hours × Rs. 1.22)	220
Total Production Cost	2,52,376

Question 22

The following information are available for the three machines of a manufacturing department of KBC Ltd.:

	Preliminary estimates of expenses (per annum)			
	Total	Machines		
		P	Q	R
	(₹)	(₹)	(₹)	(₹)
Depreciation	20,000	7,500	7,500	5,000
Spare parts	10,000	4,000	4,000	2,000
Power	40,000			
Consumable stores	10,000	4,000	3,000	3,000
Insurance of machinery	8,000			
Indirect labour	20,000			
Building maintenance expenses	20,000			
Annual interest on capital outlay	60,000	25,000	25,000	10,000
Monthly charge for rent and rates	10,000			
Salary of foreman (per month)	20,000			
Salary of Attendant (per month)	5,000			

(The foreman and the attendant control all the three machines and spend equal time on them.)

The following additional information is also available:

	Machines		
	P	Q	R
Estimated Direct Labour Hours	1,00,000	1,50,000	1,50,000
Ratio of K.W. Rating	3	2	3
Floor space (sq. ft.)	40,000	40,000	20,000

There are 14 holidays besides Sundays in the year, of which two were on Saturdays. The manufacturing department works 8 hours in a day but Saturdays are half days. All machines work at 85% capacity throughout the year and 2% is reasonable for breakdown.

You are required to :

CALCULATE predetermined machine hour rates for the above machines after taking into consideration the following factors:

- **An increase of 15% in the price of spare parts.**
- **An increase of 25% in the consumption of spare parts for machine 'Q' & 'R' only.**
- **20% general increase in wages rates.**
- **An 10% decrease in the consumption of consumable stores.**

(MTP 10 Marks Apr'24, MTP Oct'18, 10 Marks, RTP Nov'20)

Answer 22

Computation of Machine Hour Rate

		Basis of apportionment	Total	Machines		
				P	Q	R
			(₹)	(₹)	(₹)	(₹)
(A)	**Standing Charges**					
	Insurance	Depreciation Basis	8,000	3,000	3,000	2,000
	Indirect Labour	Direct Labour	24,000	6,000	9,000	9,000
	Building Maintenance expenses	Floor Space	20,000	8,000	8,000	4,000
	Rent and Rates	Floor Space	1,20,000	48,000	48,000	24,000
	Salary of foreman	Equal	2,40,000	80,000	80,000	80,000
	Salary of attendant	Equal	60,000	20,000	20,000	20,000
	Total standing charges		4,72,000	1,65,000	1,68,000	1,39,000
	Hourly rate for standing charges			90.36	92.00	76.12
(B)	**Machine Expenses:**					
	Depreciation	Direct	20,000	7,500	7,500	5,000
	Spare parts	Final estimates	13,225	4,600	5,750	2,875
	Power	K.W. rating	40,000	15,000	10,000	15,000
	Consumable Stores	Direct	9,000	3,600	2,700	2,700
	Total Machine expenses		82,225	30,700	25,950	25,575
	Hourly Rate for Machine expenses			16.81	14.21	14.01
	Total (A + B)		5,54,225	1,95,700	1,93,950	1,64,575
	Machine Hour rate			107.17	106.22	90.13

Working Notes:

(i) Calculation of effective working hours:

No. of holidays 52 (Sundays) + 14 (other holidays) = 66

Saturday (52-2) = 50

No. of days (Work full time) = 365 – 66 – 50 = 249

	Hours
Full days work 249 × 8	= 1,992
Half days work 50 × 4	= 200
	2,192

	Hours	
Effective capacity 85% of 2,192	1,863	(Rounded off)
Less: Normal loss of time (Breakdown) 2%	37	(Rounded off)
Effective running hour	1,826	

(ii) Amount of spare parts is calculated as under:

	P	Q	R
	₹	₹	₹
Preliminary estimates	4,000	4,000	2,000
Add: Increase in price @ 15%	600	600	300
	4,600	4,600	2,300
Add: Increase in consumption @ 25%	-	1,150	575
Estimated cost	4,600	5,750	2,875

(iii) Amount of Indirect Labour is calculated as under:

	₹
Preliminary estimates	20,000
Add: Increase in wages @ 20%	4,000
	24,000

(iv) Amount of Consumables Stores is calculated as under:

	₹
Preliminary estimates	10,000
Less: Decrease in consumption @ 10%	1,000
	9,000

(v) Interest on capital outlay is a financial matter and, therefore it has been excluded from the cost accounts.

Question 23

LDR

PL Ltd. has three production departments P1, P2 and P3 and two service departments S1 and S2. The following data are extracted from the records of the company for the month of October, 2020:

	(Rs.)
Rent and rates	12,50,000
General lighting	1,50,000
Indirect Wages	3,75,000
Power	5,00,000
Depreciation on machinery	10,00,000
Insurance of machinery	4,00,000

Other Information:

	P1	P2	P3	S1	S2
Direct wages (Rs.)	7,50,000	5,00,000	7,50,000	3,75,000	1,25,000
Horse Power of Machines used	60	30	50	10	-
Cost of machinery (Rs.)	60,00,000	80,00,000	1,00,00,000	5,00,000	5,00,000
Floor space (Sq. ft)	2,000	2,500	3,000	2,000	500
Number of light points	10	15	20	10	5
Production hours worked	6,225	4,050	4,100	-	-

Expenses of the service departments S1 and S2 are reapportioned as below:

	P1	P2	P3	S1	S2
S1	20%	30%	40%	-	10%
S2	40%	20%	30%	10%	-

Required:

(i) **COMPUTE overhead absorption rate per production hour of each production department.**

(ii) **DETERMINE the total cost of product X which is processed for manufacture in department P1, P2 and P3 for 5 hours, 3 hours and 4 hours respectively, given that its direct material cost is Rs. 12,500 and direct labour cost is Rs. 7,500.** ***(RTP Nov'21) (Same concepts different figures RTP May'20, SM, MTP 10 Marks Mar'22, PYP 10 Marks Nov'20)***

Answer 23

Primary Distribution Summary

Item of cost	Basis of apportionment	Total (Rs.)	P1 (Rs.)	P2 (Rs.)	P3 (Rs.)	S1 (Rs.)	S2 (Rs.)
Direct wages	Actual	5,00,000	--	--	--	3,75,000	1,25,000
Rent and Rates	Floor area (4 : 5 : 6 : 4 : 1)	12,50,000	2,50,000	3,12,500	3,75,000	2,50,000	62,500
General lighting	Light points (2 : 3 : 4 : 2 : 1)	1,50,000	25,000	37,500	50,000	25,000	12,500
Indirect wages	Direct wages (6 : 4 : 6 : 3 : 1)	3,75,000	1,12,500	75,000	1,12,500	56,250	18,750
Power	Horse Power of machines used (6 : 3 : 5 : 1)	5,00,000	2,00,000	1,00,000	1,66,667	33,333	-

Depreciation of machinery	Value of machinery (12 : 16 : 20 : 1 : 1)	10,00,000	2,40,000	3,20,000	4,00,000	20,000	20,000
Insurance of machinery	Value of machinery (12 : 16 : 20 : 1 : 1)	4,00,000	96,000	1,28,000	1,60,000	8,000	8,000
		41,75,000	**9,23,500**	**9,73,000**	**12,64,167**	**7,67,583**	**2,46,750**

Overheads of service cost centres

Let S_1 be the overhead of service cost centre S_1 and S_2 be the overhead of service cost centre S_2.

$S_1 = 7,67,583 + 0.10\ S_2$

$S_2 = 2,46,750 + 0.10\ S_1$

Substituting the value of S_2 in S_1 we get

$S_1 = 7,67,583 + 0.10\ (2,46,750 + 0.10\ S_1)$

$S_1 = 7,67,583 + 24,675 + 0.01\ S_1$

$0.99\ S_1 = 7,92,258$

$\therefore S_1$ = Rs. 8,00,260

$\therefore S_2$ = 2,46,750 + 0.10 X 8,00,260

= Rs. 3,26,776

Secondary Distribution Summary

Particulars	**Total (Rs.)**	$P_1(rs.)$	$P_2(rs.)$	$P_3(rs.)$
Allocated and Apportioned Over-heads as per primary distribution	31,60,667	9,23,500	9,73,000	12,64,167
S_1	8,00,260	1,60,052	2,40,078	3,20,104
S_2	3,26,776	1,30,710	65,355	98,033
		12,14,262	**12,78,433**	**16,82,304**

(i) Overhead rate per hour

	P1	**P2**	**P3**
Total overheads cost (Rs.)	12,14,262	12,78,433	16,82,304
Production hours worked	6,225	4,050	4,100
Rate per hour (Rs.)	**195.06**	**315.67**	**410.32**

(ii) Cost of Product X

	(Rs.)
Direct material	12,500.00
Direct labour	7,500.00
Prime cost	**20,000.00**
Production on overheads	
P_1 5 hours X Rs. 195.06 = 975.30	
P_2 3 hours X Rs. 315.67 = 947.01	
P_3 4 hours X Rs. 410.32 = 1,641.28	3,563.59
Factory cost	**23,563.59**

Question 24 LDR

In a manufacturing company, the overhead is recovered as follows: Factory Overheads: a fixed percentage basis on direct wages and Administrative overheads: a fixed percentage basis on factory cost.

The company has furnished the following data relating to two jobs undertaken by it in a period.

	Job 1(₹)	**Job 2(₹)**
Direct materials	**1,08,000**	**75,000**
Direct wages	**84,000**	**60,000**
Selling price	**3,33,312**	**2,52,000**
Profit percentage on total cost	**12%**	**20%**

You are required to:

(i) Compute the percentage recovery rates of factory overheads and administrative overheads.

(ii) Calculate the amount of factory overheads, administrative overheads and profit for each of the two jobs.

(iii) Using the above recovery rates, determine the selling price to be quoted for job 3. Additional data

pertaining to Job 3 is as follows:

Direct materials	₹ 68,750
Direct wages	₹ 22,500
Profit percentage on selling price	15%

(PYP 10 Marks May'22) (Same concept different figures SM,MTP 10 Marks Oct'23)

Answer 24

Computation of percentage recovery rates of factory overheads and administrative overheads.

Let the factory overhead recovery rate as percentage of direct wages be F and administrative overheads recovery rate as percentage of factory cost be A.

Factory Cost of Jobs:

Direct materials + Direct wages + Factory overhead

For Job 1 = ₹ 1,08,000 +₹ 84,000 + ₹ 84,000F

For Job 2 = ₹ 75,000 +₹ 60,000 + ₹ 60,000F

Total Cost of Jobs:

Factory cost + Administrative overhead

For Job 1 = (₹ 1,92,000 + ₹ 84,000F) + (₹ 1,92,000 + ₹ 84,000F) A = ₹ 2,97,600*

For Job-2 = (₹ 1,35,000 + ₹ 60,000F) + (₹1,35,000+ ₹ 60,000F) A = ₹ 2,10,000**

The value of F & A can be found using following equations

1,92,000 + 84,000F + 1,92,000A + 84,000AF	=	₹ 2,97,600	.....eqn (i)
1,35,000 + 60,000F + 1,35,000A + 60,000AF	=	₹ 2,10,000	.....eqn (ii)

Multiply equation (i) by 5 and equation (ii) by 7

9,60,000 + 4,20,000F + 9,60,000A + 4,20,000AF	=	₹14,88,000	...eqn (iii)
9,45,000 + 4,20,000F + 9,45,000A + 4,20,000AF	=	₹ 14,70,000	...eqn (iv)
- - - -		-	
15,000 + 15,000A	=	₹18,000	

15,000 A = 18,000 – 15,000

A = 0.20

Now putting the value of A in equation (i) to find the value of F

1,92,000 + 84,000F + (1,92,000 × 0.20) + (84,000 F × 0.20)= ₹ 2,97,600

Or

1,92,000 + 84,000F+38,400+16,800 F = ₹2,97,600

1,00,800 F = 67,200

F = 0.667

On solving the above relations: F = 0.667 and A = 0.20

Hence, percentage recovery rates of:

Factory overheads = 66.7% or 2/3rd of wages and

Administrative overheads = 20% of factory cost.

Working note:

Total Cost = $\frac{Selling\ price}{(100\% + Percentage\ of\ profit)}$

*For Job 1 = $\frac{₹\ 3,33,312}{(100\% + 12\%)}$ = ₹ 2,97,600

**For Job 2 $\frac{₹2,52,000}{(100\% + 20\%)}$ = ₹ 2,10,000

(ii) **Statement of jobs, showing amount of factory overheads, administrative overheads and profit:**

	Job 1 (₹)	Job 2 (₹)
Direct materials	1,08,000	75,000
Direct wages	84,000	60,000
Prime cost	1,92,000	1,35,000
Factory overheads		
2/3rd of direct wages	**56,000**	**40,000**
Factory cost	2,48,000	1,75,000
Administrative overheads		

20% of factory cost	**49,600**	**35,000**
Total cost	**2,97,600**	**2,10,000**
Profit (12% & 20% respectively)	**35,712**	**42,000**
Selling price	3,33,312	2,52,000

(iii) **Selling price of Job 3**

	(₹)
Direct materials	68,750
Direct wages	22,500
Prime cost	91,250
Factory overheads (2/3rd of Direct Wages)	15,000
Factory cost	1,06,250
Administrative overheads (20% of factory cost)	21,250
Total cost	**1,27,500**
Profit margin (balancing figure)	22,500
Selling price $\left(\frac{Total\ Cost}{85\%}\right)$	**1,50,000**

EXAM INSIGHTS: This numerical question tested the knowledge of examinees on the topic overheads - absorption costing method. Examinees had to calculate factory overheads and administrative overheads recovery rate using equations and then to calculate factory overheads, administrative overheads and profit amount for two jobs. Most of the examinees failed to calculate recovery rates correctly. Performance of the examinees was below average.

Question 25

Wave Ltd. is a manufacturing company having two production departments, P and Q and two service departments, R and S. The budgeted cost information for the month of October 2023 is furnished below:

		Production Departments		Service Departments	
	(₹)	P (₹)	Q (₹)	R (₹)	S (₹)
Indirect material	1,77,500	94,750	49,750	18,270	14,730
Indirect Labour	1,55,000	35,000	75,000		
Factory Rent	75,000				
Depreciation on machinery	37,500				
Power	96,000				
Security Expenses for Factory Premises	24,000				
Insurance- machinery	12,000				
Supervisor Expenses	48,000				
Additional information					
Floor Area (Sq. meters)		1250	750	200	300
Net book value of machinery (₹)		21,00,000	5,00,000	1,00,000	3,00,000
H.P. of machines		800	200	80	120
Machine hours		4,000	1,000	600	800
Number of employees		10	30	6	4
Labour hours		2,000	6,000	1,200	600

The overhead costs of the two-service department are distributed using step method in the same order viz. R and S respectively on the following basis:

Department R — **Number of employees**

Department S — **Machine hours**

Required:

(i) **Prepare a statement showing distribution of overheads to various departments, clearly showing the basis of distribution.**

(ii) Calculate the total budgeted overheads for both production departments after the service departments have been re-apportioned to them.

(iii) Calculate the most appropriate overhead absorption rate for each of the production department.

(PYP 10 Marks Nov'23)

Answer 25

(i) Overhead Distribution Statement

Particular	Basis	Total Amount (₹)	Production Departments		Service Departments	
			P (₹)	Q (₹)	R (₹)	S (₹)
Indirect material	Direct	1,77,500	94,750	49,750	18,270	14,730
Indirect labour	Direct	1,55,000	35,000	75,000	15,000	30,000
Factory rent (125:75:20:30)	Floor Area	75,000	37,500	22,500	6,000	9,000
Depreciation of machinery (21:5:1:3)	Book value of machinery	37,500	26,250	6,250	1,250	3,750
Power (80:20:8:12)	H.P. of machines	96,000	64,000	16,000	6,400	9,600
Security expenses for factory premises (125:75:20:30)	Floor Area	24,000	12,000	7,200	1,920	2,880
Insurance machiney (21:5:1:3)	Book value of machinery	12,000	8,400	2,000	400	1,200
Supervisor expenses (10:30:6:4)	Number of employees	48,000	9,600	28,800	5,760	3,840
Total		**6,25,000**	**2,87,500**	**2,07,500**	**55,000**	**75,000**

(ii) Redistribution of Service Department's Expenses

Particular	Production Departments		Service Departments	
	P (₹)	Q (₹)	R (₹)	S (₹)
Overhead as per primary distribution	2,87,500	2,07,500	55,000	75,000
Expenses of service department R is apportioned among other departments P, Q & S in the ratio of number of employees (10:30:4)	12,500	37,500	(55,000)	5,000
Expenses of service department S is apportioned among other departments P & Q in the ratio of Machine hours (40:10)	64,000	16,000	-	(80,000)
Total Budgeted overheads	3,64,000	2,61,000	-	-

(iii) Calculation of overhead rates for each of the production department

Particular	Production Departments	
	P (₹)	Q (₹)
Total Budgeted overheads	3,64,000	2,61,000
Actual machine hours	4000 hours	-
Actual labour hours	-	6000 hours
Actual machine/labour hour rate	91	43.5

Note: Department P is assumed to be machine oriented and Department Q is assumed to be labour oriented as per information available in the question

The solution 3(a) can also be presented in following way for Distribution of Power expenses:

Overhead Distribution Statement

Particular	Basis	Total Amount (₹)	Production Departments		Service Departments	
			P (₹)	Q (₹)	R (₹)	S (₹)
Indirect material	Direct	1,77,500	94,750	49,750	18,270	14,730
Indirect labour	Direct	1,55,000	35,000	75,000	15,000	30,000
Factory rent (125:75:20:30)	Floor Area	75,000	37,500	22,500	6,000	9,000

Depreciation of machinery (21:5:1:3)	Book value of machinery	37,500	26,250	6,250	1,250	3,750
Power (3200:200:48:96)	H.P. x machine hours	96,000	86,682	5,418	1,300	2,600
Security expenses for factory premises (125:75:20:30)	Floor Area	24,000	12,000	7,200	1,920	2,880
Insurance- machinery (21:5:1:3)	Book value of machinery	12,000	8,400	2,000	400	1,200
Supervisor expenses (10:30:6:4)	Number of employees	48,000	9,600	28,800	5,760	3,840
Total		**6,25,000**	**3,10,182**	**1,96,918**	**49,900**	**68,000**

Power can be distributed on the basis of HP of machines x machine hours

800 x 4000 = 32,00,000, 200 x 1000 = 2,00,000, 80 x 600 = 48,000, 120 x 800 = 96,000

Ratio is 3200:200:48:96

(ii) **Redistribution of Service Department's Expenses**

Particular	Production Departments		Service Departments	
	P (₹)	Q (₹)	R (₹)	S (₹)
Overhead as per primary distribution	3,10,182	1,96,918	49,900	68,000
Expenses of service department R is apportioned among other departments P, Q & S in the ratio of number of employees (10:30:4)	11,340.90	34,022.73	(49,900)	4,536.37
Expenses of service department S is apportioned among other departments P & Q in the ratio of Machine hours (40:10)	58,029.10	14,507.27	-	(72,536.37)
Total Budgeted overheads	3,79,552	2,45,448	-	-

(iii) **Calculation of overhead rates for each of the production department**

Particular	Production Departments	
	P (₹)	Q (₹)
Total Budgeted overheads	3,79,552	2,45,448
Actual machine hours	4000 hours	-
Actual labour hours	-	6000 hours
Actual machine/labour hour rate	**94.89**	**40.91**

Note: Department P is assumed to be machine oriented and Department Q is assumed to be labour oriented as per information available in the question

EXAM INSIGHTS: Question on absorption costing requiring preparation of a statement showing Distribution of overheads to various departments, calculation of total budgeted overheads for both production departments after the service departments have been reapportioned to them and calculation of the most appropriate absorption rate for each of the production department. Most of the examinees could not distribute the overheads to various departments on the correct basis resulting in wrong calculation of total budgeted overheads. Overall performance of the examinees was **average.**

Question 26

This data pertains to the three machines operating in the manufacturing division of PQR Corp for the financial year 2023-2024:

Particulars	Estimated Expenses			
	TOTAL (₹)	Machines		
		X (₹)	Y (₹)	Z (₹)
Direct Labour Expenses (per quarter)	2,50,000			
Oil Expenses (per quarter)	1,03,125	37,500	37,500	28,125
Machine Insurance Expenses (per quarter)	60,000			
Depreciation (per annum)	6,00,000	1,00,000	2,00,000	3,00,000

Building Maintenance Expenses (per quarter)	1,00,000			
Wages of Operator (per quarter)	2,25,000			
Electricity Expenses (per quarter)	3,00,000			
Rent and Rates (per month)	80,000			
Salary of Technician (per month)	62,500			

(The Technician works only on machines X and Y and the Operator controls all three machines and both spend equal time on each of the machines worked upon by them.)

There are 14 holidays besides Sundays in the year, of which six are on Saturdays. There was a Strike of workers for 5 working days (including one Saturday). The manufacturing department operates for 8 hours per day on regular week days, while on Saturdays, the operating hours are reduced by 2 hours per day. All machines operate at 80% capacity throughout the year. Assume 366 days in a year.

The following additional information is also available:

(i) A 20% hike in the price of oil.

(ii) A 10% rise in Oil consumption for machines 'X' and 'Y' only.

(iii)

Particulars	Machines		
	X	Y	Z
No. of Workers	5	3	2
Ratio of K.W. Rating	3	3	4
Ratio of Floor space utilized	1	2	1

Required:

Prepare a Statement detailing the allocation of expenses to each machine on an annual basis and thereafter, compute the comprehensive machine hour rate for each of the specified machine. *(PYP 7 Marks Sep'24)*

Answer 26

Computation of Comprehensive Machine Hour Rate

Particulars	Basis of Apportionment	Total (₹)	Machines		
			X (₹)	Y (₹)	Z (₹)
Standing Charges (PerAnnum)					
Direct Labour Expenses	No. of Workers (5:3:2)	10,00,000	5,00,000	3,00,000	2,00,000
Wages of Operator	Equal	9,00,000	3,00,000	3,00,000	3,00,000
Machine Insurance Expenses	Depreciation (1:2:3)	2,40,000	40,000	80,000	1,20,000
Building MaintenanceExpenses	Floor Space (1:2:1)	4,00,000	1,00,000	2,00,000	1,00,000
Rent and Rates	Floor Space (1:2:1)	9,60,000	2,40,000	4,80,000	2,40,000
Salary of Technician	(1:1:0)	7,50,000	3,75,000	3,75,000	-
Total Standing Charges		42,50,000	15,55,000	17,35,000	9,60,000
Hourly Rate (A)			856.28	955.40	528.63
Machine Expenses (PerAnnum)					
Oil Expenses	Direct (W.N.1)	5,31,000	1,98,000	1,98,000	1,35,000
Depreciation	Direct	6,00,000	1,00,000	2,00,000	3,00,000
Electricity Expenses	K. W. Rating	12,00,000	3,60,000	3,60,000	4,80,000
Total Machine Expenses	(3:3:4)	23,31,000	6,58,000	7,58,000	9,15,000
Hourly Rate (B)			362.33	417.40	503.85
Total Expenses		65,81,000	22,13,000	24,93,000	18,75,000
(A) + (B)			**1,218.61**	**1,372.80**	**1,032.49**

Calculation of Effective Working Hours.

	Per Machine Per Annum
Full Day Working Hours (250 days x 8 hours)	2,000

6 hours per day Working Hours (45 days x 6 hours)	270
Total Hours	**2,270**
Capacity Utilization	80%
Effective working hours	**1,816**

No. of Shutdown Days		
Sundays	52	
Holidays	14	
Strike Period	5	
	71	
No. of 6 Hours Working Days		
Saturdays	52	
Less: Holidays	(6)	
Less: Strike Period	(1)	
	45	
No. of Full Working Days		
Total No of Days in a year		366
Less: No of Shutdown Days		(71)
Less: No. of 6 Hours Working Days		(45)
		250

Working notes

1. Calculation of Oil Expenses.

Particulars	Machines		
	X (₹)	Y (₹)	Z (₹)
Oil Expenses	1,50,000	1,50,000	1,12,500
Add: Increase in Price @20%	30,000	30,000	22,500
	1,80,000	1,80,000	1,35,000
Add: Increase in Consumption@10%	18,000	18,000	-
Total	**1,98,000**	**1,98,000**	**1,35,000**

Question 27

Han Ltd. sells three products namely 'A', 'B' and 'C'. The following information is available regarding sales, costs and activity for the year ended 31st March:

Particulars	A	B	C
Sales (₹)	60,00,000	90,00,000	54,00,000
Cost of Sales (₹)	30,00,000	78,00,000	27,00,000
Area of storage (sq.ft.)	72,000	1,08,000	36,000
Number of parcels sent	2,40,000	3,00,000	2,10,000
Number of invoices sent	60,000	90,000	1,44,000

Selling and Distribution overheads and the basis of allocation are as follows :

Fixed Cost	Amount (₹)	Basis of allocation to Products
Rent and Insurance	6,00,000	Square feet
Depreciation	2,70,000	Parcel
Salesman's salaries & expenses	11,40,000	Sales Volume
Administrative wages and salaries	9,00,000	No. of Invoices
Variable Costs:		
Packing wages & materials		₹ 4.80 per parcel
Commission		2.40% of sales
Stationery		₹ 1.80 per invoice

Finance Manager of the Company has recommended to discontinue the Product 'C' since it's sales is less compared to other products. You are required to PREPARE the profitability statement of each product, showing the percentage of profit/ (loss) on sales for each product, and also EXAMINE the recommendation

Answer 27

Profitability statement of each product for the year ended 31st March

Particulars	Total (₹)	Products		
		A (₹)	B (₹)	C (₹)
Sales	2,04,00,000	60,00,000	90,00,000	54,00,000
Variable Costs:				
Cost of sales	1,35,00,000	30,00,000	78,00,000	27,00,000
Commission @2.40% of sales	4,89,600	1,44,000	2,16,000	1,29,600
Packaging wages and materials @ ₹4.80 per parcel	36,00,000	11,52,000	14,40,000	10,08,000
Stationery @ ₹1.80 per invoice	5,29,200	1,08,000	1,62,000	2,59,200
Total Variable Costs	1,81,18,800	44,04,000	96,18,000	40,96,800
Contribution (sales-variable cost)	22,81,200	15,96,000	(6,18,000)	13,03,200
Fixed costs:				
Rent and insurance	6,00,000	2,00,000	3,00,000	1,00,000
Depreciation	2,70,000	86,400	1,08,000	75,600
Salesman's salary and expenses	11,40,000	3,35,294	5,02,941	3,01,765
Administrative wages and salaries	9,00,000	1,83,674	2,75,510	4,40,816
Total Fixed Costs	29,10,000	8,05,368	11,86,451	9,18,181
Profit or loss(Contribution –Fixed costs)	(6,28,800)	7,90,632	(18,04,451)	3,85,019
Percentage ofprofit or loss on sales (%)	(3.08)%	13.18%	(20.05)%	7.13%

Recommendation of finance manager is not correct. Product 'C' shouldnot be discontinued as it is profitable.

Question 28

Baba Ltd. belongs to an automotive industry, manufacturing hybrid bicycles. The production of bicycles passes through three departments, viz. X1, Y2, Z3. The bicycles being equipped with gears needs quality check from time to time. Thus, the company also operates two service departments, namely quality control (QC) and maintenance (M), for its bicycle.

Following information is extracted from the accounting books regarding expenses as incurred/ charged:

Particulars	(₹)
Rent and Rates	40,00,000
General Lighting	4,80,000
Indirect Wages	15,51,200
Power	12,00,000
Depreciation on Machines	80,00,000
Sundries	77,56,000

Additional information:

	Production Departments			Service Departments	
	X1	Y2	Z3	QC	M
Direct wages (₹)	24,00,000	16,00,000	24,00,000	12,00,000	1,56,000

Working hours	6,140	8,950	4,838	-	-
Value of machines (₹)	4,80,00,000	6,40,00,000	8,00,00,000	40,00,000	40,00,000
H.P. of machines	120	60	100	20	-
Light points	20	30	40	20	10
Floor space (sq. ft.)	4,000	5,000	6,000	4,000	1,000

A technical assessment unveiled the following basis for the apportionment of expenses of service departments:

	X1	Y2	Z3	QC	M
QC	20%	30%	40%	-	10%
M	40%	20%	30%	10%	-

You are required to DETERMINE the following:

(i) Overheads distributed to all the departments, viz. X1, Y2, Z3, QC and M.

(ii) Overheads total and rate per hour under all the Production Departments after redistribution of Service Department's Overhead.

(iii) Total cost of a bicycle, considering the Direct Material and labour Cost of ₹ 20,000 and ₹ 12,000 respectively, which is being processed for manufacturing in Departments X1, Y2 and Z3 for 4, 5 and 3 hours respectively. (MTP 12 Marks Nov'24)

Answer 28

(i) Statement Showing Distribution of Overheads of Baba Ltd.

Particulars	Basis	Total	Production Departments			Service Departments	
			X1	Y2	Z3	QC	M
		(₹)	(₹)	(₹)	(₹)	(₹)	(₹)
Direct wages	Actual	13,56,000	-	-	-	12,00,000	1,56,000
Rent & rates	Area	40,00,000	8,00,000	10,00,000	12,00,000	8,00,000	2,00,000
General lighting	Light points	4,80,000	80,000	1,20,000	1,60,000	80,000	40,000
Indirect wages	Direct wages	15,51,200	4,80,000	3,20,000	4,80,000	2,40,000	31,200
Power	H.P.	12,00,000	4,80,000	2,40,000	4,00,000	80,000	-
Depreciatio nof machines	Value of machines	80,00,000	19,20,000	25,60,000	32,00,000	1,60,000	1,60,000
Sundries	Direct wages	77,56,000	24,00,000	16,00,000	24,00,000	12,00,000	1,56,000
		2,43,43,200	**61,60,000**	**58,40,000**	**78,40,000**	**37,60,000**	**7,43,200**

(ii) Redistribution of Service Department's Expenses over Production Departments

	X1 (₹)	Y2 (₹)	Z3 (₹)	QC (₹)	M (₹)
Total overhead distributed as above	61,60,000	58,40,000	78,40,000	37,60,000	7,43,200
Dept. QC Overheads apportioned (20:30:40:—:10)	7,52,000	11,28,000	15,04,000	-37,60,000	3,76,000
Dept. M overheads apportioned (40:20:30:10:—)	4,47,680	2,23,840	3,35,760	1,11,920	- 11,19,200
Dept. QC Overheads apportioned (20:30:40:—:10)	22,384	33,576	44,768	-1,11,920	11,192
Dept. M overheads apportioned (40:20:30:10:—)	4,477	2,238	3,358	1,119	-11,192

Dept. QC Overheads apportioned (20:30:40:—:10)	224	336	448	-1,119	112
Dept. M overheads apportioned (40:20:30:10:—)	45	22	34	11	-112
Dept. QC Overheads apportioned (20:30:40:—:10)	2	3	5	-11	-
Total	**73,86,812**	**72,28,015**	**97,28,373**		
Working hours	6,140	8,950	4,838		
Rate per hour	**1,203**	**808**	**2,011**		

(iii) Determination of total cost of a bicycle:

Particulars	**(₹)**
Direct material cost	20,000
Direct labour cost	12,000
Overhead cost (See working note)	14,885
	46,885

Working Note:

Overhead cost

= (₹1,203 × 4 hrs.) + (₹808 × 5 hrs.) + (₹2,011 × 3 hrs.)

= ₹4,812 + ₹4,040 + ₹6,033 = ₹14,885

Multiple Choice Questions (MCQ)

1. **"Fixed overhead costs are not affected in monetary terms during a given period bya change in output". But this statement holds good provided:** ***(SM)***

   (a) Increase in output is not substantial
   (b) Increase in output is substantial
   (c) Both (a) and (b)
   (d) None of the above

Ans:(a)

2. **_____capacity is defined as actually utilized capacity of a plant.** ***(SM)***

   (a) Theoretical
   (b) Installed
   (c) Practical
   (d) Normal

Ans: (c)

3. **The allotment of whole items of cost-to-cost centers or cost units is called:** ***(SM)***

   (a) Overhead absorption
   (b) Cost apportionment
   (c) Cost allocation
   (d) None of the above

Ans: (c)

4. **Primary packing cost is a part of:** ***(SM)***

   (a) Direct material cost
   (b) Production Cost
   (c) Selling overheads
   (d) Distribution overheads

Ans: (b)

5. **Director's remuneration and expenses form part of:** ***(SM)***
   (a) Production overhead
   (b) Administration overhead
   (c) Selling overhead
   (d) Distribution overhead

Ans: (b)

6. **Which of the following is not the classification of overhead based on its functionality?** ***(SM)***
   (a) Factory Overhead
   (b) Administrative Overhead
   (c) Fixed Overhead
   (d) Selling Overhead

Ans: (c)

7. **Bad debt is an example of:** ***(SM)***
   (a) Distribution overhead
   (b) Production overhead
   (c) Selling overhead
   (d) Administration overhead

Ans: (c)

8. **Normal capacity of a plant refers to the difference between:** ***(SM)***
   (a) Maximum capacity and practical capacity
   (b) Practical capacity and normal capacity
   (c) Practical capacity and estimated idle capacity as revealed by long termsales trend.
   (d) Maximum capacity and actual capacity

Ans: (c)

9. **The difference between actual factory overhead and absorbed factory overhead will be usually at the minimum level, provided pre- determined overhead rate is based on:** ***(SM)***
   (a) Maximum capacity
   (b) Direct labor hours
   (c) Machine hours
   (d) Normal capacity

Ans: (d)

10. **Which of the following overhead cost may not be apportioned on the basis of direct wages?** ***(SM)***
   (a) Worker's Holiday Pay
   (b) Perquisites to worker
   (c) ESI contribution
   (d) Managerial Salaries

Ans: (d)

11. **Based on the data below, what is the amount of the overhead under-/over- absorbed?**
   Budgeted overhead – ₹ 5,25,000,
   Budgeted machine hours- 17,500
   Actual machine hours- 17,040
   Actual overheads- ₹ 5,20,000 ***(MTP 2 Marks, Mar'24)***
   (a) 5,000 under-absorbed
   (b) 8,800 under-absorbed
   (c) 8,800 over-absorbed
   (d) 5,000 over-absorbed

Ans: (b)

12. The accountant for Brilliant Tools Ltd applies overhead based on machine hours. The budgeted overhead and machine hours for the year are ₹ 1,30,000 and 8,000 hours, respectively. The actual overhead and machine hours incurred were ₹ 1,37,500 and 10,000 hours. The cost of goods sold and inventory data compiled for the year is as follows:

Direct Material ₹ 25,000

Cost of Goods Sold ₹ 2,25,000

Units: WIP 50,000 and Finished Goods 75,000

What is the amount of over/under absorbed overhead for the year? *(RTP Sep'24)*

(a) Over absorbed by ₹ 25,000
(b) Under absorbed by ₹ 25,000
(c) Over a absorbed by ₹ 32,500
(d) Under absorbed by ₹ 32,500

Ans: (a)

13. A factory has a capacity utilization ratio of 85% and its activity ratio is 95%.Which one of the following is the efficiency ratio? *(MTP 2 Marks Aug'24)*

(a) 120%
(b) 110%
(c) 112%
(d) 90%

Ans: (c)

14. Gaarmentz Ltd. run a sewing factory for medical garments. But, the company suffers from the limiting factor i.e. labor. Each sewing machine needs 100% attention of one person at a particular point of time to operate it. The company has 8 number of alike sewing machines on which 8 operators work separately. The following particulars are furnished for a six months period:

Paid hours for all the 8 operators	9,594 hours
Effective working hours for all the 8 operators	9,360 hours
Average rate of wages per day of 8 hours per operator	₹ 110
Power consumed	₹ 60,125
Supervision and Indirect Labour	₹ 21,450
The following particulars are given for a year:	
Insurance	₹ 4,68,000
Sundry Expenses	₹ 7,15,000

Depreciation charged is 10% on the original cost of all the sewing machines.

Repairs and Maintenance comes to 5% of the value of all the sewing machines.

The original cost of all the sewing machines works out to ₹ 41,60,000

CALCULATE the Comprehensive Machine Hour Rate. *(RTP Jan'25)*

(a) ₹ 215.86
(b) ₹ 217.99
(c) ₹ 116.43
(d) ₹ 119.34

Ans: (d)

15. The Budgeted fixed overhead for the month of August was ₹ 75,00,000 with the units of production estimated at 15,000. However, the actual units produced is 15,600 with no Fixed overhead cost variance.

CALCULATE the actual fixed overhead incurred. *(MTP 2 Marks Dec'24)*

(a) ₹ 75,00,000
(b) ₹ 72,11,538
(c) ₹ 78,00,000
(d) ₹ 79,00,000

Ans: (c)

CHAPTER 5: ACTIVITY BASED COSTING

CONCEPTS OF THIS CHAPTER

- Problems of Traditional Costing System.
- Usefulness of Activity Based Costing (ABC).
- Cost allocation under ABC.
- Different levels of activities under ABC.
- Stages, advantages, and limitations of ABC.
- Requirements for ABC implementation.
- Concept of Activity Based Management (ABM).
- Concept of Activity Based Budgeting (ABB).

LDR Questions

Q 14 Q 22
Q 23 Q 26

QUICK REVIEW OF IMPORTANT CONCEPTS

Meaning Of Activity Based Costing

- An accounting method that allocates costs to activities instead of products or services.
- Costs are allocated based on the resources they consume.
- Establishes a connection between the activity (resource consumption) and the cost object.
- Beneficial for organizations with multiple products.

Stages in Activity-Based Costing (ABC)

1. **Identifying Activities:** Break down the organization into numerous distinct activities.
2. **Allocating Overheads:** Assign overhead costs to the identified activities, forming 'cost pools' or 'cost buckets.'
3. **Distributing Support Costs:** Allocate support activities across primary activities based on their usage, determined by cost drivers.
4. **Identifying Cost Drivers:** Establish the cost drivers for each activity to link overheads in cost pools to cost objects.
5. **Calculating Cost Driver Rates:** Compute the cost driver rate for each activity using the formula: **Activity Cost Driver Rate = (Total Cost of Activity) / (Activity Driver)**

Questions & Answers

Theory Questions

Question 1

WRITE DOWN the corresponding cost drivers related to the following activity cost pools: Inspecting and testing costs, Setting-up machines cost, Machining costs, Supervising Costs, Ordering and Receiving Materials cost *(MTP 5 Marks Sep'22)*

Answer 1

Activity Cost Pools	Related Cost Drivers
Inspecting and testing costs	Number of tests
Setting up machines cost	Number of set-ups
Machining costs	Machine hours
Supervising Costs	Direct labour hours
Ordering and Receiving Materials cost	Number of purchase orders

Question 2

PP Limited is in the process of implementation of Activity Based Costing System in the organization. For this purpose, it has identified the following Business Functions in its organization:

(i) **Research and Development**
(ii) **Design of Products, Services and Procedures**
(iii) **Customer Service**
(iv) **Marketing**
(v) **Distribution**

You are required to specify two cost drivers for each Business Function Identified above.
(PYP 5 Marks Nov'22)

Answer 2

Business functions	Cost Driver
Research and Development	• Number of research projects • Personnel hours on a project • Technical complexities of the project
Design of products, services and procedures	• Number of products in design • Number of parts per product • Number of engineering hours
Customer Service	• Number of service calls • Number of products serviced • Hours spent on servicing products
Marketing	• Number of advertisements • Number of sales personnel • Sales revenue
Distribution	• Number of units distributed • Number of customers • Weight of items distributed

(Any two cost drivers of each business function)

EXAM INSIGHTS: **This** theory question on Activity Based Costing requiring examinees to specify two cost drivers for each given business function. Most of the examinees answered it only partially correct. Performance of the examinees was **below average.**

Question 3

What is meant by cost driver? Give its different categories. Suggest suitable cost drivers (at least two) in the following business functions:

(i) **Distribution**
(ii) **Research and Development**
(iii) **Customer services *(PYP 5 Marks Nov'23)***

Answer 3

Meaning of Cost Driver: A Cost driver is a factor or variable which effect level of cost. Generally, it is an activity which is responsible for cost incurrence. Level of activity or volume of production is the example of a cost driver. An activity may be an event, task, or unit of work etc.
There are two categories of cost driver.

- **Resource Cost Driver** - It is a measure of the quantity of resources consumed by an activity. It is used to assign the cost of a resource to an activity or cost pool.
- **Activity Cost Driver** - It is a measure of the frequency and intensity of demand, placed on activities by cost objects. It is used to assign activity costs to cost objects.

Business Function	Cost drivers
Distribution	Number of units distributed, Number of customers
Research and Development	Number of research projects, personnel hours on a project, technical complexities of the projects.
Customer service	Number of service calls, number of products serviced, hours spent in servicing of products.

EXAM INSIGHTS: Theory question requiring examinees to explain the meaning of cost driver and suggest suitable cost drivers for the given business functions. Most of the examinees could not explain the meaning of cost driver correctly. However, some of the cost drivers suggested were correct. Performance of the examinees was below average.

Question 4

EXPLAIN the Usefulness/Suitability of ABC. *(MTP 4 Marks Aug'24)*

Answer 4

ABC is particularly needed by organisations for product costing in the following situations:

1. **High amount of overhead**: When production overheads are high and form significant costs, ABC is more useful than traditional costing system.
2. **Wide range of products**: ABC is most suitable, when, there is diversity in the product range or there are multiple products.
3. **Presence of non-volume related activities**: When non-volume related activities e.g. material handling, inspection set-up, are present significantly and traditional system cannot be applied, ABC is a superior and better option. ABC will identify non-value- adding activities in the production process that might be a suitable focus for attention or elimination.
4. **Stiff competition**: When the organisation is facing stiff competition and there is an urgent requirement to compute cost accurately andto fix the selling price according to the market situation, ABC is very useful. ABC can also facilitate in reducing cost by identifying non- value-adding activities in the production process that might be a suitable focus for attention or elimination.

Question 5

DISCUSS in brief three main methods of allocating support departments costs to operating departments. *(MTP 4 Marks Dec'24)*

Answer 5

The three main methods of allocating support departments costs to operating departments are:

(i) **Direct re-distribution method:** Under this method, support department costs are directly apportioned to various production departments only. This method does not consider the service provided by one support department to another support department.

(ii) **Step method:** Under this method the cost of the support departments that serves the maximum numbers of departments is first apportioned to other support departments and production departments. After this the cost of support department serving the next largest number of departments is apportioned. In this manner we finally arrive on the cost of production departments only.

(iii) **Reciprocal service method:** This method recognises the fact that where there are two or more support departments they may render services to each other and, therefore, these inter-departmental services are to be given due weight while re-distributing the expenses of the support departments. The methods available for dealing with reciprocal services are:

(a) Simultaneous equation method
(b) Repeated distribution method
(c) Trial and error method.

Question 6

KD Ltd. is following Activity based costing. Budgeted overheads, cost drivers and volume are as follows:

Cost pool	Budgeted overheads (₹)	Cost driver	Budgeted volume
Material procurement	18,42,000	No. of orders	1,200
Material handling	8,50,000	No. of movement	1,240
Maintenance	24,56,000	Maintenance hours	17,550
Set-up	9,12,000	No. of set-ups	1,450
Quality control	4,42,000	No. of inspection	1,820

The company has produced a batch of 7,600 units, its material cost was ₹24,62,000 and wages ₹4,68,500.

Usage activities of the said batch are as follows:

Material orders	56
Material movements	84
Maintenance hours	1,420 hours
Set-ups	60
No. of inspections	18

Required:

(i) CALCULATE cost driver rates.

(ii) CALCULATE the total and unit cost for the batch.

(MTP 5 Marks Apr'23) (Same concept different figures RTP Nov'20)

Answer 6

(i) Calculation of cost driver rate:

Cost pool	Budgeted overheads (₹)	Cost driver	Cost driver rate (₹)
Material procurement	18,42,000	1,200	1,535.00
Material handling	8,50,000	1,240	685.48
Maintenance	24,56,000	17,550	139.94
Set-up	9,12,000	1,450	628.97
Quality control	4,42,000	1,820	242.86

(ii) Calculation of cost for the batch:

Particulars	Amount (₹)	Amount (₹)
Material cost		24,62,000.00
Wages		4,68,500.00
Overheads:		
- Material procurement (₹1,535×56 orders)	85,960.00	
- Material handling (₹685.48×84 movements)	57,580.32	
- Maintenance (₹139.94×1,420 hours)	1,98,714.80	
- Set-up (₹628.97×60 set-ups)	37,738.20	
- Quality control (₹242.86×18 inspections)	4,371.48	3,84,364.80
Total Cost		33,14,864.80
No. of units		7,600
Cost per units		436.17

Question 7

ABY Ltd. manufactures four products, namely A, B, C and D using the same plant and process. The following information relates to production period December, 2020:

Product	A	B	C	D
Output in units	1,440	1,200	960	1,008
Cost per unit:				
Direct Materials	Rs. 84	Rs. 90	Rs. 80	Rs. 96
Direct Labour	Rs. 20	Rs. 18	Rs. 14	Rs. 16
Machine hours per unit	4	3	2	1

The four products are similar and are usually produced in production runs of 48 units per batch and are sold in batches of 24 units. Currently, the production overheads are absorbed using machine hour rate. The production overheads incurred by the company for the period December, 2020 are as follows:

	(Rs.)
Machine department costs:	
Rent, deprecation and supervision	2,52,000
Set-up Costs	80,000
Store receiving costs	60,000
Inspection	40,000
Material handling and dispatch	10,368

During the period December, 2020, the following cost drivers are to be used for allocation of overheads cost:

Cost	Cost driver
Set-up Costs	Number of production runs (batches)
Stores receiving	Requisition raised
Inspection	Number of production runs (batches)
Material handling and dispatch	Orders executed

It is also determined that:

(i) Machine department costs should be apportioned among set-up, stores receiving and inspection activities in proportion of 4 : 3 : 2.

(ii) The number of requisitions raised on stores is 50 for each product. The total number of material handling and dispatch orders executed during the period are 192 and each order being for a batch size of 24 units of product.

Required:

i. CALCULATE the total cost of each product, if all overhead costs are absorbed on machine- hour rate basis.

ii. CALCULATE the total cost of each product using activity-based costing *(MTP 10 Marks, Mar'21)*

Answer 7

(i) Total Overhead = Rs. (2,52,000 + 80,000 + 60,000+40,000+10,368) = Rs. 4,42,368

Total Machine hours = 1,440 X 4 + 1,200 X3 + 960 X2 + 1,008 X1

= 5,760 + 3,600+1,920 +1,008 = 12,288 M. Hrs.

$\therefore$ Overhead recovery rate/M.H.= $\frac{\text{Rs.4,42,369}}{\text{12,228 M./hours}} = \text{Rs. 36}$

Cost Statement when overheads are absorbed on machine hours rate basis

Product	A	B	C	D
Output in units	1,440	1,200	960	1,008
	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Cost per unit:				
Direct material	84	90	80	96
Direct labour	20	18	14	16
Overhead (@ Rs. 36)	144 (4 × Rs.36)	108 (3 × Rs.36)	72 (2 ×Rs.36)	36 (1×Rs.36)
Total cost per unit	248	216	166	148
Total cost	3,57,120	2,59,200	1,59,360	1,49,184

(ii) (1) Machine department costs of Rs. 2,52,000 to be apportioned to set-up cost, store receiving and inspection in 4: 3: 2 i.e. Rs. 1,12,000, Rs. 84,000 and Rs. 56,000 respectively.

(2) One production run = 48 units. Hence, the number of production runs of different products:

$$A = \frac{1,440}{48} = 30, B = \frac{1,200}{48} = 25, C = \frac{960}{48} = 20, D = \frac{1,008}{48} = 21, \text{OR TOTAL 96 Runs.}$$

(3) One batch order is of 24 units. So the number of batches of different products:

$A = \frac{1,440}{24} = 60$, $B = \frac{1,200}{24} = 50$, $C = \frac{960}{24} = 40$, $D = \frac{1,008}{24} = 42$ Or total 192 batches.

(4) Computation of Cost driver rates

Activity	Activity Cost (Rs.)	Cost driver	Quantity	Cost driver rate
Set-up	80,000 + 1,12,000 = 1,92,000	No. of production run	96	Rs. 2,000 per production run
Store-receiving	60,000 + 84,000 = 1,44,000	Requisition raised	50 × 4 = 200	Rs. 720 per requisition
Inspection	40,000 + 56,000 = 96,000	No. of production run	96	Rs. 1,000 per production run
Material handling	10,368	Orders executed (No. of batches)	192	Rs. 54 per batch

(5) **Cost statement under Activity Based Costing:**

Product	A	B	C	D
Output in units	1,440	1,200	960	1,008
	(Rs.)	**(Rs.)**	**(Rs.)**	**(Rs.)**
Material	1,440 × 84 = 1,20,960	1,200 × 90 = 1,08,000	960 × 80 = 76,800	1,008 × 96 = 96,768
Labour	1,440 × 20 = 28,800	1,200 × 18 = 21,600	960 × 14 = 13,440	1,008 × 16 = 16,128
	1,49,760	1,29,600	90,240	1,12,896
Overhead cost:				
Set up	2,000 × 30 = 60,000	2,000 × 25 = 50,000	2,000 × 20 = 40,000	2,000 × 21 = 42,000
Store receiving	720 × 50 = 36,000	720 × 50 = 36,000	720 × 50 = 36,000	720 × 50 = 36,000
Inspection	1,000 × 30 = 30,000	1,000 × 25 = 25,000	1,000 × 20 = 20,000	1,000 × 21 = 21,000
Material handling	54 × 60 = 3,240	54 × 50 = 2,700	54 × 40 = 2,160	54 × 42 = 2,268
Total overhead cost	1,29,240	1,13,700	98,160	1,01,268
Total cost	2,79,000	2,43,300	1,88,400	2,14,164
Total cost per unit (Total cost / Output)	193.75	202.75	196.25	212.46

Question 8

Wavelength Cinema provides the following data for the year 2020-21:

Particulars	Premium Hall (Rs.)	Recliner Hall (Rs.)	7D Hall (Rs.)	Cafeteria (Rs.)
Revenue	11,55,000	18,75,000	9,30,000	5,25,000
Cost of Goods sold	-	-	-	4,51,125
Digital media cost	6,19,800	9,46,875	4,02,900	-
Number of Credit Card transactions	75,000	90,000	60,000	45,000
Number of Tests	12,000	18,000	15,000	7,500
Number of Setups	225	450	150	75
Area in Square feet	3,000	4,500	2,250	750
Number of Customer contacts	2,62,500	3,00,000	1,50,000	37,500

Number of Customer online orders	2,10,000	2,47,500	1,20,000	22,500

Cost analysis has revealed the following:

Activity	Activity Cost (Rs.)	Activity Driver	Activity Capacity
Marketing Expenses	2,25,000	Number of Customer contacts	7,50,000
Website Maintenance	1,50,000	Number of Customer online	6,00,000
Expenses		orders	
Credit Card Processing Fees	1,35,000	Number of Credit Card transactions	2,70,000
Cleaning Equipment Cost	3,15,000	Number of square feet	10,500
Inspecting and testing costs	2,62,500	Number of tests	52,500
Setting up machine's costs	4,50,000	Number of set-ups	900

Required:

(i) If Wavelength Cinema allocates all costs (other than Cost of Goods sold and Digital Media costs) to the departments on the basis of Activity Based Costing system, CALCULATE the operating income and percentage of operating income of each department.

(ii) Wavelength Cinema operated for years under the assumption that profitability can be increased by increasing net revenue from Cafeteria. However, the Supervisor of Wavelength Cinema wants to shut down Cafeteria. On the basis of (i) above, STATE whether the contention of the Supervisor is valid or not. (MTP 10 Marks, Apr'21) *(SM)*

Answer 8

Computation showing Rates for each Activity

Activity	Activity Cost (Rs.) (A)	Activity driver	Activity Capacity (B)	Activity Rate (A/B)
Marketing Expenses	2,25,000	Number of Customer Contacts	7,50,000	0.30
Website Maintenance Expenses	1,50,000	Number of Customer Online orders	6,00,000	0.25
Credit Card Processing Fees	1,35,000	Number of Credit card transactions	2,70,000	0.50
Cleaning Equipment Cost	3,15,000	Number of Square Feet	10,500	30.00
Inspecting and Testing Cost	2,62,500	Number of Tests	52,500	5.00
Setting up machine's cost	4,50,000	Number of set-ups	900	500.00

Activity based Cost for each Department

Activity	Premium Hall (Rs.)	Recliner Hall (Rs.)	7D Hall (Rs.)	Cafeteria (Rs.)
Marketing Expenses	78,750 (2,62,500 x 0.3)	90,000 (3,00,000 x 0.3)	45,000 (1,50,000 x 0.3)	11,250 (37,500 x 0.3)
Website Maintenance Expenses	52,500 (2,10,000 x 0.25)	61,875 (2,47,500 x 0.25)	30,000 (1,20,000 x 0.25)	5,625 (22,500 x 0.25)
Credit Card Processing Fees	37,500 (75,000 x 0.5)	45,000 (90,000 x 0.5)	30,000 (60,000 x 0.5)	22,500 (45,000 x 0.5)
Cleaning Equipment Cost	90,000 (3,000 x 30)	1,35,000 (4,500 x 30)	67,500 (2,250 x 30)	22,500 (750 x 30)
Inspecting and Testing Cost	60,000 (12,000 x 5)	90,000 (18,000 x 5)	75,000 (15,000 x 5)	37,500 (7,500 x 5)
Setting up machine's cost	1,12,500 (225 x 500)	2,25,000 (450 x 500)	75,000 (150 x 500)	37,500 (75 x 500)
Total	4,31,250	6,46,875	3,22,500	1,36,875

(i) **Statement of Operating Income and Operating Income percentage for each Department**

Particulars	Premium Hall (Rs.)	Recliner Hall (Rs.)	7D Hall (Rs.)	Cafeteria (Rs.)
Revenues (Given) (A)	11,55,000	18,75,000	9,30,000	5,25,000
Cost of Goods Sold (given) (B1)	-	-	-	4,51,125
Digital Media Cost (given) (B2)	6,19,800	9,46,875	4,02,900	-
Activity Based Cost (as per Workings) (B3)	4,31,250	6,46,875	3,22,500	1,36,875
Operating Cost (B) (B1+ B2 + B3)	10,51,050	15,93,750	7,25,400	5,88,000
Operating Income/(Loss) (C = A – B)	1,03,950	2,81,250	2,04,600	(63,000)
Percentage of profit/(loss) on sales	**9%**	**15%**	**22%**	**(12%)**

(ii) Contention of Supervisor is valid as operating income of Cafeteria is negative i.e. (Rs. 63,000) or percentage of profit/loss is (12%).

Question 9

SMD Limited manufactures four products namely A, B, C and D using the same production and process facilities. The company has been following conventional method of costing and wishes to shift to activity-based costing system.

The data pertaining to four products are:

Product	Units produced	Material per unit (₹)	Labour hours per unit	Machine hours per unit
A	1,500	140	1	3
B	2,500	90	3	2
C	10,000	180	2	6
D	6,000	150	1.5	4

The following activity volumes are associated to the production process for the relevant period -

	Number of Inspections	Number of Material Movements	Number of set-ups
A	200	15	100
B	250	20	125
C	900	100	600
D	650	85	400

The cost data also states that:

- **Direct Labour cost: ₹ 60 per hour**
- **Machine hour rate: ₹ 280 per hour**
- **Production overheads are absorbed on machine hour basis.**
- **For activity-based costing, a thorough, analysis of the production process revealed that:**

Costs relating to set-ups and inspection bears the equal percentage while costs relating to machinery accounts for 20% of the production overhead.

Costs relating to material handling stands at 50% of costs relating to machinery. You are required to:

(i) **Prepare a statement showing the unit costs and total costs of each product using the absorption costing method.**

(ii) **Prepare a statement showing the unit costs and total costs of each product using activity - based costing system.** ***(MTP 10 Marks Sep'22)***

Answer 9

(i) **Cost per unit - Conventional Costing: Absorption rate method**

Particulars	A (₹)	B (₹)	C (₹)	D (₹)
Material	140	90	180	150
Labour @ ₹ 60 per labour hour	60	180	120	90
Overheads @ ₹ 280 per machine hour	840	560	1680	1120
Cost per unit (in ₹)	**1,040**	**830**	**1,980**	**1,360**

No of units	1,500	2,500	10,000	6,000
Total cost (₹)	**15,60,000**	**20,75,000**	**1,98,00,000**	**81,60,000**

(ii) Statement of apportionment of overheads: **Amount (₹)**

Type of Cost	Cost Driver	A	B	C	D
Setups	No of Setups	7,48,000 (100 x 7,480)	9,35,000 (125x7,480)	44,88,000 (600 x 7,480)	29,92,000 (400 x7,480)
Machinery	Machine hours	2,52,000 (4,500 x 56)	2,80,000 (5,000 x 56)	33,60,000 (60,000 x 56)	13,44,000 (24,000 x 56)
Material Handling	No. of Movements of material	1,78,500 (15 x 11,900)	2,38,000 (20 x 11,900)	11,90,000 (100 x 11,900)	10,11,500 (85 x 11,900)
Inspection	No. of Inspections	9,16,300 (200x4,581.50)	11,45,375 (250x4,581.50)	41,23,350 (900x4,581.50)	29,77,975 (650x4,581.50)
Total		**20,94,800**	**25,98,375**	**1,31,61,350**	**83,25,475**
Output Units		1,500	2,500	10,000	6,000
Overhead/ unit		1,396.53	1,039.35	1,316.14	1,387.58

Statement showing Cost per unit and Total cost using Activity Based Costing

Particulars	A (₹)	B (₹)	C (₹)	D (₹)
Material	140.00	90.00	180.00	150.00
Labour	60.00	180.00	120.00	90.00
Total	**200.00**	**270.00**	**300.00**	**240.00**
No. of units	1,500	2,500	10,000	6,000
Total cost (excluding overheads)	3,00,000	6,75,000	30,00,000	14,40,000
Add: Overheads (as calculated)	20,94,800	25,98,375	1,31,61,350	83,25,475
Total cost	**23,94,800**	**32,73,375**	**1,61,61,350**	**97,65,475**
Cost per unit	**1,596.53**	**1,309.35**	**1,616.14**	**1,627.58**

Working Notes:

1. **Calculation of Total machine hours**

Particulars	A	B	C	D
(a) Machine hours per unit	3	2	6	4
(b) Production(units)	1,500	2,500	10,000	6,000
(c) Total machine hours (a) x(b)	4,500	5,000	60,000	24,000

Total Machine hours = 93,500

Total production overheads= 93,500 x 280 = ₹ **2,61,80,000**

2. **Calculation of cost driver rate**

Cost pool	Amount of cost (₹)	Cost Driver (basis)	Cost Driver (units)	Cost Driver Rate (₹)
Setups	91,63,000	No. of Setups	1,225	7,480 per set up
Machinery	52,36,000	Machine Hrs.	93,500	56 per machine hour
Material Handlings	26,18,000	No. of Material Movements	220	11,900 per material movement
Inspection	91,63,000	No. of Inspections	2,000	4,581.50 per inspection
	2,61,80,000			

Question 10

Hygiene Care Ltd. is a manufacturer of a range of goods. The cost structure of its different products is as follows:

Particulars	Hand Wash	Detergent Powder	Dishwasher
Direct Materials (₹ / Pu)	150	120	120
Direct Labour @₹10/ hour (₹ / Pu)	45	60	75

Production Overheads (₹ / Pu)	40	50	40
Total Cost (₹ / Pu)	235	230	235
Quantity Produced (Units)	30,000	60,000	90,000

Hygiene Care Ltd. was absorbing overheads on the basis of direct labour hours. Management accountant has suggested that the company should introduce ABC system and has identified cost drivers and cost pools as follows:

Activity Cost Pool	Cost Driver	Associated Cost (₹)
Goods Receiving	Number of Dispatch Order	8,88,000
Inspecting and Testing costs	Number of Production Runs	26,82,000
Dispatching	Number of dispatch order	6,30,000
Storage Cost	Number of Batches of material	36,00,000

The following information is also supplied:

Details	Hand Wash	Detergent Powder	Dishwasher
Batches of material	720	780	900
Number of dispatch order	360	540	600
No. of Production Runs	1,500	2,100	2,400
Number of Dispatch Orders	600	900	1,000

Required:

CALCULATE activity-based production cost of all the three products. (RTP May'23)

Answer 10

1. **The Total Production Overhead are 78,00,000**

Items	Labour Hour	Overheads allocation on the basis of direct Labour Hour (₹)
Labour Hour Ratio	(4.5:6:7.5)	
Hand Wash	1,35,000	9,00,000
Detergent Powder	3,60,000	24,00,000
Dishwasher	6,75,000	45,00,000
Total	**11,70,000**	**78,00,000**

2. **On the basis of ABC analysis this amount will be apportioned as follows: Statement Showing "Activity Based Production Cost"**

Activity Cost Pool	Cost Driver	Ratio	Total Amount (₹)	Hand Wash (₹)	Detergent Powder (₹)	Dishwasher (₹)
Goods Receiving	Dispatch order	06:09:10	8,88,000	2,13,120	3,19,680	3,55,200
Inspecting and Testing costs	Production Runs	05:07:08	26,82,000	6,70,500	9,38,700	10,72,800
Dispatching	Dispatch Order	06:09:10	6,30,000	1,51,200	2,26,800	2,52,000
Storage Cost	Batches of material	12:13:15	36,00,000	10,80,000	11,70,000	13,50,000
Total Activity Cost				**21,14,820**	**26,55,180**	**30,30,000**
Quantity Produces				30,000	60,000	90,000
Unit Cost (Overheads)				70.49	44.25	33.67
Add: Conversion Cost (Material + Labour)				195	180	195
Total				**265.49**	**224.25**	**228.67**

Note: This question can also be solved by using cost driver rate

Question 11

L Limited manufactures three products P, Q and R which are similar in nature and are usually produced in production runs of 100 units. Product P and R require both machine hours and assembly hours, whereas product Q requires only machine hours. The overheads incurred by the company during the first quarter are as under:

	₹
Machine Department expenses	18,48,000
Assembly Department expenses	6,72,000
Setup costs	90,000
Stores receiving cost	1,20,000
Order processing and dispatch	1,80,000
Inspect and Quality control cost	36,000

The data related to the three products during the period are as under:

	P	Q	R
Units produced and sold	15,000	12,000	18,000
Machine hours worked	30,000 hrs.	48,000 hrs.	54,000 hrs.
Assembly hours worked (direct labour hours)	15,000 hrs.	-	27,000 hrs.
Customers' orders executed (in numbers)	1,250	1,000	1,500
Number of requisitions raised on the stores	40	30	50

Prepare a statement showing details of overhead costs allocated to each product type using activity-based costing. ***(RTP Nov'23)***

Answer 11

Calculation of "Activity Rate"

Cost Pool	Cost (₹) [A]	Cost Driver [B]	Cost Driver Rate (₹) [C] = [A]÷[B]
Machine Department Expenses	18,48,000	Machine Hours (1,32,000 hrs.)	14.00
Assembly Department Expenses	6,72,000	Assembly Hours (42,000 hrs.)	16.00
Setup Cost	90,000	No. of Production Runs (450*)	200.00
Stores Receiving Cost	1,20,000	No. of Requisitions Raised on the Stores (120)	1,000.00
Order Processing and Dispatch	1,80,000	No. of Customers Orders Executed (3,750)	48.00
Inspection and Quality Control Cost	36,000	No. of Production Runs (450*)	80.00
Total (₹)	29,46,000		

**Number of Production Run is 450 (150 + 120 + 180)*

Statement Showing "Overheads Allocation"

Particulars of Cost	Cost Driver	P	Q	R	Total
Machine Department Expenses	Machine Hours	4,20,000 (30,000 ×₹14)	6,72,000 (48,000 × ₹14)	7,56,000 (54,000 ×₹14)	18,48,000
Assembly Department Expenses	Assembly Hours	2,40,000 (15,000 ×₹16)	---	4,32,000 (27,000 ×₹16)	6,72,000
Setup Cost	No. of Production Runs	30,000 (150 ×₹200)	24,000 (120 ×₹200)	36,000 (180 ×₹200)	90,000
Stores Receiving Cost	No. of Requisitions Raised on the Stores	40,000 (40 ×₹1,000)	30,000 (30 ×₹1,000)	50,000 (50 ×₹1,000)	1,20,000
Order Processing and Dispatch	No. of Customers Orders Executed	60,000 (1,250 ×₹48)	48,000 (1,000 ×₹48)	72,000 (1,500 ×₹48)	1,80,000
Inspection and Quality Control Cost	No. of Production Runs	12,000 (150 ×₹80)	9,600 (120 ×₹80)	14,400 (180 ×₹80)	36,000
Overhead (₹)		8,02,000	7,83,600	13,60,400	29,46,000

Question 12

Icecold a FMCG Company manufactures and sells three flavors of ice cream: Dark chocolate, Chocolate, and Butterscotch. The batch size for the ice cream is limited to 1,000 ice cream based on the size of the fridge and ice cream molds owned by the company. Based on budgetary projections, the information listed below is available:

	Dark chocolate	Chocolate	Butterscotch
Projected sales in units	500,000	800,000	600,000
PER UNIT data:			
Selling price	₹80	₹75	₹60
Direct materials	₹20	₹15	₹14
Direct labor	₹4	₹2	₹2
Hours per 1000-unit batch:			
Direct labor hours	20	10	10
Fridge hours	1	1	1
Packaging hours	0.5	0.5	0.5

Total overhead costs and activity levels for the year are estimated as follows:

Activity	Overhead costs	Activity levels
Direct labor		2,400 hours
Fridge	₹2,10,00,000	1,900 fridge hours
Packaging	₹1,50,00,000	950 packaging hours
	₹3,60,00,000	

Required:

a. With the help of ABC system, for the Chocolate ice cream:
   1. Compute the activity-cost-driver rate
   2. Compute the estimated overhead costs per thousand ice cream.
   3. Compute the estimated operating profit per thousand ice cream.

b. With the help of traditional system (with direct labor hours as the overhead allocation base), for the Chocolate ice cream, compute the estimated operating profit per thousand ice cream.

(MTP 7 Marks July'24)

Answer 12

a.

1. Estimation of cost-driver rate

Activity	Overhead cost(₹)	Cost driver	Cost driver rate(₹)
Packaging	1,50,00,000	950 Packaging hours	15,789.47
Fridge	2,10,00,000	1,900 Fridge hours	11,052.63

2. Overhead cost for chocolate ice cream

Activity	Overhead for a 1,000-ice cream batch	Amount (₹)
Packaging	1 x ₹ 11,052.63	11,052.63
Fridge	0.5 x ₹ 15,789.47	7,894.74
Total		18,947.37

3. Operating profit for chocolate ice cream

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	18,947.37
Operating Profit	21,052.63

b. Overhead per direct hour

= Total Overhead / Total Direct Labour Hours

= ₹ 3,60,00,000 / 24,000 hours

= ₹ 1,500 per direct labour hour

Since it takes 10 direct labour hour per 1,000 Chocolate ice cream,the overhead is ₹ 15,000

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	15,000
Operating Profit	25,000

Question 13

PQR Ltd. is engaged in the production of three products P, Q and R. The company calculates Activity Cost Rates on the basis of Cost Driver capacity which is provided as below:

Activity	Cost Driver	Cost Driver Capacity	Cost (₹)
Direct Labour hours	Labour hours	30,000 Labour hours	3,00,000
Production runs	No. of Production runs	600 Production runs	1,80,000
Quality Inspections	No. of Inspection	8000 Inspections	2,40,000

The consumption of activities during the period is as under:

Activity / Products	P	Q	R
Direct Labour hours	10,000	8,000	6,000
Production runs	200	180	160
Quality Inspection	3,000	2,500	1,500

You are required to:

(i) Compute the costs allocated to each Product from each Activity.

(ii) Calculate the cost of unused capacity for each Activity.

(iii) A potential customer has approached the company for supply of 12,000 units of a new product. 'S' to be delivered in lots of 1500 units per quarter. This will involve an initial design cost of ₹ 30,000 and per quarter production will involve the following:

Direct Material	₹ 18,000
Direct Labour hours	1,500 hours
No. of Production runs	15
No. of Quality Inspection	250

Prepare cost sheet segregating Direct and Indirect costs and compute the Sales value per quarter of product 'S' using ABC system considering a markup of 20% on cost. ***(PYP 10 Marks Jul'21)***

Answer 13

(i) Statement of cost allocation to each product from each activity

	Product			
	P (₹)	Q (₹)	R (₹)	Total (₹)
Direct Labour hours (Refer to working note)	1,00,000 (10,000 Labour hours × ₹10)	80,000 (8,000 Labour hours × ₹10)	60,000 (6,000 Labour hours × ₹10)	2,40,000
Production runs (Refer to working note)	60,000 (200 Production runs × ₹ 300)	54,000 (180 Production runs × ₹ 300)	48,000 (160 Production runs × ₹ 300)	1,62,000
Quality Inspections (Refer to working note)	90,000 (3,000 Inspections × ₹30)	75,000 (2,500 Inspections × ₹ 30)	45,000 (1,500 Inspections × ₹ 30)	2,10,000

Working note:

Rate per unit of cost driver

Direct Labour hours	(₹ 3,00,000/30,000 Labour hours)	₹ 10 per Labour hour
Production runs	(₹ 1,80,000/600 Production runs)	₹ 300 per Production run
Quality Inspection	(₹ 2,40,000/8,000 Inspections)	₹ 30 per Inspection

(ii) **Computation of cost of unused capacity for each activity**

Particulars	(₹)
Direct Labour hours [(₹ 3,00,000 – ₹ 2,40,000) or (6,000 x ₹ 10)]	60,000
Production runs [(₹ 1,80,000 – ₹ 1,62,000) or (60 x ₹ 300)]	18,000
Quality Inspection [(₹ 2,40,000 – ₹ 2,10,000) or (1,000 x ₹ 30)]	30,000
Total cost of unused capacity	**1,08,000**

(iii) **Cost sheet and Computation of Sales value per quarter of product 'S' using ABC system**

Particulars	(₹)
1500 units of product 'S' to be delivered per quarter	
Initial design cost per quarter (₹ 30,000 / 8 quarters)	3,750
Direct Material Cost	18,000
Direct Labour Cost (1,500 Labour hours x ₹ 10)	15,000
Direct Costs (A)	**36,750**
Set up Cost (15 Production runs × ₹ 300)	4,500
Inspection Cost (250 Inspections × ₹ 30)	7,500
Indirect Costs (B)	**12,000**
Total Cost (A + B)	48,750
Add: Mark-up (20% on cost)	**9,750**
Sale Value	**58,500**
Selling Price per unit 'S' (₹ 58,500/1500 units)	**39**

EXAM INSIGHTS: It was a practical problem testing the knowledge of examinees on the topic Activity Based Costing, requiring examinees to identify cost of allocated capacity and unused capacity on three products. It also required examinees to find out sales value of the offered new product by segregating cost into direct and indirect cost. First two sub parts i.e. allocation of cost and determination of cost of unused capacity were answered well, but examinees failed to segregate cost into direct and indirect in the third sub part. Performance of the examinees was above average.

Question 14 — LDR

'Humara - Apna' bank offers three products, viz., deposits, Loans and Credit Cards. The bank has selected 4 activities for a detailed budgeting exercise, following activity based costing methods.
The bank wants to know the product wise total cost per unit for the selected activities, so that prices may be fixed accordingly.
The following information is made available to formulate the budget:

Activity	Present Cost (Rs.)	Estimation for the budget period
ATM Services:		
(a) Machine Maintenance	4,00,000	All fixed, no change.
(b) Rents	2,00,000	Fully fixed, no change.
(c) Currency	1,00,000	Expected to double during budget period.
Replenishment Cost	7,00,000	(This activity is driven by no. of ATM transactions)
Computer Processing	5,00,000	Half this amount is fixed and no change is expected. The variable portion is expected to increase to three times the current level. (This activity is driven by the number of computer transactions)
Issuing Statements	18,00,000	Presently, 3 lakh statements are made. In the budget period, 5 lakh statements are expected. For every increase of one lakh statement, one lakh rupees is the budgeted increase. (This activity is driven by the number of statements)

Computer Inquiries	2,00,000	Estimated to increase by 80% during the budget period. (This activity is driven by telephone minutes)

The activity drivers and their budgeted quantifies are given below:

Activity Drivers	Deposits	Loans	Credit Cards
No. of ATM Transactions	1,50,000	---	50,000
No. of Computer Processing Transactions	15,00,000	2,00,000	3,00,000
No. of Statements to be issued	3,50,000	50,000	1,00,000
Telephone Minutes	3,60,000	1,80,000	1,80,000

The bank budgets a volume of 58,600 deposit accounts, 13,000 loan accounts, and 14,000 Credit Card Accounts.

Required

(i) CALCULATE the budgeted rate for each activity.

(ii) PREPARE the budgeted cost statement activity wise.

(iii) COMPUTE the budgeted product cost per account for each product using (i) and (ii) above.

(MTP 10 Marks Apr'19 & Oct'23, SM) (Same concepts different figures MTP 10 Marks Apr'22)

Answer 14

Statement Showing "Budgeted Cost per unit of the Product"

Activity	Activity Cost (Budgeted (Rs.)	Activity Driver	No. of Units of Activity Driver (Budget)	Activity Rate (Rs.)	Deposits	Loans	Credit Cards
ATM Services	8,00,000	No. of ATM Transaction	2,00,000	4.00	6,00,000	---	2,00,000
Computer Processing	10,00,000	No. of Computer Transaction	20,00,000	0.50	7,50,000	1,00,000	1,50,000
Issuing Statements	20,00,000	No. of Statements	5,00,000	4.00	14,00,000	2,00,000	4,00,000
Customer Inquiries	3,60,000	Telephone Minutes	7,20,000	0.50	1,80,000	90,000	90,000
Budgeted Cost	41,60,000				29,30,000	3,90,000	8,40,000
Units of Product (as estimated in the budget period)					58,600	13,000	14,000
Budgeted Cost per unit of the product					50	30	60

Working Note

Activity	Budgeted Cost (Rs.)	Remark
ATM Services:		
(a) Machine Maintenance	4,00,000	- All fixed, no change.
(b) Rents	2,00,000	- Fully fixed, no change.
(c) Currency Replenishment Cost	2,00,000	- Doubled during budget period.
Total	8,00,000	
Computer Processing	2,50,000	- Rs.2,50,000 (half of Rs.5,00,000) is fixed and no change is expected.
	7,50,000	- Rs.2,50,000 (variable portion) is expected to increase to three times the current level.
Total	10,00,000	
Issuing Statements	18,00,000	- Existing.
	2,00,000	- 2 lakh statements are expected to be increased in budgeted period. For every increase of one lakh statement, one lakh rupees is the budgeted increase.

Total	20,00,000	
Computer Inquiries	3,60,000	- Estimated to increase by 80% during the budget period. (Rs.2,00,000 x 180%)
Total	3,60,000	

Question 15

Family Store wants information about the profitability of individual product lines: Soft drinks, Fresh produce and Packaged food. Family store provides the following data for the year 20X7-X8 for each product line:

	Soft drinks	Fresh produce	Packaged food
Revenues	₹ 39,67,500	₹ 1,05,03,000	₹ 60,49,500
Cost of goods sold	₹ 30,00,000	₹ 75,00,000	₹ 45,00,000
Cost of bottles returned	₹ 60,000	₹ 0	₹ 0
Number of purchase orders placed	360	840	360
Number of deliveries received	300	2,190	660
Hours of shelf-stocking time	540	5,400	2,700
Items sold	1,26,000	11,04,000	3,06,000

Family store also provides the following information for the year 20X7-X8:

Activity	Description of activity	Total Cost	Cost-allocation base
Bottles returns	Returning of empty bottles	₹ 60,000	Direct tracing to soft drink line
Ordering	Placing of orders for purchases	₹ 7,80,000	1,560 purchase orders
Delivery	Physical delivery and receipt of goods	₹ 12,60,000	3,150 deliveries
Shelf stocking	Stocking of goods on store shelves and on-going restocking	₹ 8,64,000	8,640 hours of shelf-stocking time
Customer Support	Assistance provided to customers including check-out	₹ 15,36,000	15,36,000 items sold

Required:

(i) **Family store currently allocates support cost (all cost other than cost of goods sold) to product lines on the basis of cost of goods sold of each product line. CALCULATE the operating income and operating income as a % of revenues for each product line.**

(ii) **If Family Store allocates support costs (all costs other than cost of goods sold) to product lines using and activity based costing system, Calculate the operating income and operating income as a % of revenues for each product line.** ***(RTP Nov'18, RTP May'20, Nov'21, SM)***

Answer 15

(i) **Statement of Operating income and Operating income as a percentage of revenues for each product line** (When support costs are allocated to product lines on the basis of cost of goods sold of each product)

	Soft Drinks (₹)	Fresh Produce (₹)	Packaged Foods (₹)	Total (₹)
Revenues: (A)	39,67,500	1,05,03,000	60,49,500	2,05,20,000
Cost of Goods sold (COGS): (B)	30,00,000	75,00,000	45,00,000	1,50,00,000
Support cost (30% of COGS): (C) (Refer working notes)	9,00,000	22,50,000	13,50,000	45,00,000
Total cost: (D) = {(B) + (C)}	39,00,000	97,50,000	58,50,000	1,95,00,000
Operating income: E= {(A)-(D)}	67,500	7,53,000	1,99,500	10,20,000
Operating income as a percentage of revenues: (E/A) × 100)	1.70%	7.17%	3.30%	4.97%

1. Working Notes

Total support cost:

	(₹)
Bottles returns	60,000
Ordering	7,80,000
Delivery	12,60,000
Shelf stocking	8,64,000
Customer support	15,36,000
Total support cost	45,00,000

2. Percentage of support cost to cost of goods sold (COGS):

$$= \frac{\text{Total support cost}}{\text{Total Cost of goods sold}} \times 100$$

$$= \frac{\text{Rs.45,00,000}}{\text{Rs.1,50,00,000}} \times 100 = 30\%$$

3. Cost for each activity cost driver:

Activity (1)	Total cost (₹) (2)	Cost allocation base (3)	Cost driver rate (4) = [(2) ÷ (3)]
Ordering	7,80,000	1,560 purchase orders	₹500 per purchase order
Delivery	12,60,000	3,150 deliveries	₹ 400 per delivery
Shelf-stocking	8,64,000	8,640 hours	₹ 100 per stocking hour
Customer support	15,36,000	15,36,000 items sold	₹ 1 per item sold

(ii) Statement of Operating income and Operating income as a percentage of revenues for each product line

(When support costs are allocated to product lines using an activity-based costing system)

	Soft drinks (₹)	Fresh Produce (₹)	Packaged Food (₹)	Total (₹)
Revenues: (A)	39,67,500	1,05,03,000	60,49,500	2,05,20,000
Cost & Goods sold	30,00,000	75,00,000	45,00,000	1,50,00,000
Bottle return costs	60,000	0	0	60,000
Ordering cost* (360:840:360)	1,80,000	4,20,000	1,80,000	7,80,000
Delivery cost* (300:2190:660)	1,20,000	8,76,000	2,64,000	12,60,000
Shelf stocking cost* (540:5400:2700)	54,000	5,40,000	2,70,000	8,64,000
Customer Support cost* (1,26,000:11,04,000:3,06,000)	1,26,000	11,04,000	3,06,000	15,36,000
Total cost: (B)	35,40,000	1,04,40,000	55,20,000	1,95,00,000
Operating income C: {(A)- (B)}	4,27,500	63,000	5,29,500	10,20,000
Operating income as a % of revenues	10.78%	0.60%	8.75%	4.97%
* Refer to working note 3				

Question 16

The profit margin of WAVE Hairclips Company were over 20% of sales producing BROWN and BLACK hairclips. During the last year, GREEN hairclips had been introduced at 10% premium in selling price after the introduction of YELLOW hairclips earlier five years back at 10/3% premium. However, the manager of the company is disheartened with the sales figure for the current financial year as follows:

Traditional Income Statement (in ₹)

	Brown	Black	Yellow	Green	Total
Sales	1,50,00,000	1,20,00,000	27,90,000	3,30,000	3,01,20,000
Material Costs	50,00,000	40,00,000	9,36,000	1,10,000	1,00,46,000
Direct Labour	20,00,000	16,00,000	3,60,000	40,000	40,00,000
Overhead (3 times of direct labour)	60,00,000	48,00,000	10,80,000	1,20,000	1,20,00,000
Total Operating Income	20,00,000	16,00,000	4,14,000	60,000	40,74,000
Return on Sales (in%)	13.3%	13.3%	14.8%	18.2%	13.5%

It is a known fact that customers are ready to pay premium amount for YELLOW and GREEN hairclips for

their attractiveness; and the percentage returns are also high on new products.

At present, all of the Plant's indirect expenses are allocated to the products at 3 times of the direct labour expenses. However, the manager is interested in allocating indirect expenses on the basis of activity cost to reveal real earner.

He provides support expenses category-wise as follows:

Support Expenses	(₹)
Indirect Labour	40,00,000
Labour Incentives	32,00,000
Computer Systems	20,00,000
Machinery depreciation	16,00,000
Machine maintenance	8,00,000
Energy for machinery	4,00,000
Total	1,20,00,000

He provides following additional information for accomplishment of his interest: Incentives to be allocated @ 40% of labour expenses (both direct and indirect).

Indirect labours are involved mainly in three activities. About half of indirect labour is involved in handling production runs. Another 40% is required just for the physical changeover from one color hairclip to another because YELLOW hairclips require substantial labour for preparing the machine as compared to other colour hairclips. Remaining 10% of the time is spend for maintaining records of the products in four parts.

Another amount spent on computer system of ₹ 20,00,000 is for maintenance of documents relating to production runs and record keeping of the four products. In aggregate, approx.. 80% of the amount expend is involved in the production run activity and approx.. 20% is used to keep records of the products in four parts. Other overhead expenses i.e. machinery depreciation, machine maintenance and energy for machinery are incurred to supply machine capacity to produce all the hairclips (practical capability of 20,000 hours).

Activity Cost Drivers:

Particulars	Brown	Black	Yellow	Green	Total
Sales Volume (units)	1,00,000	80,000	18,000	2,000	2,00,000
Selling Price (₹)	150	150	155	165	
Material cost (₹)	50	50	52	55	
Machine hours per unit (Hrs)	0.10	0.10	0.10	0.10	20,000
Production runs	100	100	76	24	300
Setup time per run (Hrs)	4	1	6	4	

You are required to –

(i) CALCULATE operating income and operating income as per percentage of sales using activity-based costing system.

(ii) STATE the reasons for different operating income under traditional income system and activity-based costing system. *(RTP Nov'22)*

Answer 16

(i) Calculation of operating income using Activity Based Costing Calculation of Cost-Driver rate

Activity	Overhead cost (₹)	Allocation	Overhead cost (₹)	Cost-driver level	Cost driver rate (₹)
Indirect labour + 40% for incentives	56,00,000	50%	28,00,000	300 Production runs	9,333.33
		40%	22,40,000	1052* Setup hours	2,129.28
		10%	5,60,000	4 Number of parts	1,40,000
Computer Systems	20,00,000	80%	16,00,000	300 Production runs	5,333.33
		20%	4,00,000	4 Number of parts	1,00,000
Machinery depreciation	16,00,000	100%	16,00,000	20,000 Machine hours	80
Machine Maintenance	8,00,000	100%	8,00,000	20,000 Machine hours	40

Energy for Machinery	4,00,000	100%	4,00,000	20,000 Machine hours	20

* (100 x 4) + (100 x 1) + (76 x 6) + (24 x 4)
= (400 + 100 + 456 + 96)
= 1052 setup hours

Activity Based Costing

	Brown	Black	Red	Green	Total
Quantity (units)	1,00,000	80,000	18,000	2,000	2,00,000
	(₹)	(₹)	(₹)	(₹)	(₹)
Sales	1,50,00,000	1,20,00,000	27,90,000	3,30,000	3,01,20,000
Less: Material Costs	50,00,000	40,00,000	9,36,000	1,10,000	1,00,46,000
Less: Direct labour	20,00,000	16,00,000	3,60,000	40,000	40,00,000
Less: 40% incentives on direct labour	8,00,000	6,40,000	1,44,000	16,000	16,00,000
(A)	**72,00,000**	**57,60,000**	**13,50,000**	**1,64,000**	**1,44,74,000**
Overheads					
Indirect labour + incentives					
- 50% based on Production runs	9,33,333 (9,333.33 x 100)	9,33,333 (9,333.33 x 100)	7,09,334 (9,333.33 x 76)	2,24,000 (9,333.33 x 24)	28,00,000
- 40% based On Setup hours	8,51,711 (2,129.28 x 400)	2,12,928 (2,129.28 x 100)	9,70,951 (2,129.28 x 456)	2,04,410 (2,129.28 x 96)	22,40,000
- 10% based on number of parts	1,40,000 (1,40,000 x 1)	1,40,000	1,40,000	1,40,000	5,60,000
Computer Systems					
- 80% based on Production runs	5,33,333 (5,333.33 x 100)	5,33,333 (5,333.33 x 100)	4,05,334 (5,333.33 x 76)	1,28,000 (5,333.33 x 24)	16,00,000
- 20% based on number of parts	1,00,000 (1,00,000 x 1)	1,00,000	1,00,000	1,00,000	4,00,000
Machinery depreciation	8,00,000 (80 x 0.1 x 1,00,000)	6,40,000 (80 x 0.1 x 80,000)	1,44,000 (80 x 0.1 x 18,000)	16,000 (80 x 0.1 x 2,000)	16,00,000
Machine Maintenance	4,00,000 (40 x 0.1 x 1,00,000)	3,20,000 (40 x 0.1 x 80,000)	72,000 (40 x 0.1 x 18,000)	8,000 (40 x 0.1 x 2,000)	8,00,000
Energy for Machinery	2,00,000 (20 x 0.1 x 1,00,000)	1,60,000 (20 x 0.1 x 80,000)	36,000 (20 x 0.1 x 18,000)	4,000 (20 x 0.1 x 2,000)	4,00,000
Total Overheads (B)	**39,58,377**	**30,39,594**	**25,77,619**	**8,24,410**	**1,04,00,000**
Operating Income (A-B)	**32,41,623**	**27,20,406**	**(12,27,619)**	**(6,60,410)**	**40,74,000**
Return on Sales (%)	**21.61**	**22.67**	**(44.00)**	**(200.12)**	**13.53**

(ii) The difference in the operating income under the two systems is due to the differences in the overheads borne by each of the products. The Activity Based Costs appear to be more accurate.

Question 17

Bopanna Ltd. produces three products Zm, Rm and Pm using the same plant and resources. It has given the following information for the year ended on 31st March 2022:

	Zm	Rm	Pm
Production Quantity (units)	**6000**	**7200**	**9840**
Cost per unit:			

Direct Material (₹)	450	420	880
Direct Labour (₹)	80	150	200

Budgeted direct labour rate was ₹40 per hour and the production overheads, shown in table below, were absorbed to products using direct labour hour rate.

Company followed Absorption Costing Method. However, the company is now considering adopting Activity Based Costing Method.

	Budgeted Overheads (₹)	Cost Driver	Remarks
Material Procurement	2,50,000	No. of orders	No. of orders was 30 units for each product.
Set-up	1,50,000	No. of production Runs	All the three products are produced in production runs of 50 units.
Quality Control	1,00,000	No. of Inspections	Done for each production run.
Maintenance	3,00,000	Maintenance hours	Total maintenance hours were 10,000 and was allocated in the ratio of 2:1:2 between X, Y & Z.

Required:

(i) CALCULATE the total cost per unit of each product using the Absorption Costing Method.

(ii) CALCULATE the total cost per unit of each product using the Activity Based Costing Method.

(MTP 10 Marks Mar'23) (Same concept different figures PYP 10 Marks Jan'21)

Answer 17

(i) Traditional Absorption Costing

	Zm	Rm	Pm	Total
(a) Quantity (units)	6,000	7,200	9,840	23,040
(b) Direct labour per unit (₹)	80	150	200	-
(c) Direct labour hours (a × b)/₹ 40	12,000	27,000	49,200	88,200

Overhead rate per direct labour hour = Budgeted overheads / Budgeted labour hours

= (₹ 2,50,000 + ₹ 1,50,000 + ₹ 1,00,000 + ₹ 3,00,000) / 88,200 hours

= ₹ 8,00,000 / 88,200 hours

= ₹ 9 per direct labour hour(approx.)

Calculation of Cost per Unit

	Zm	Rm	Pm
Direct Costs:			
Direct Material	450	420	880
Direct Labour (₹)	80	150	200
Production Overhead: (₹)	18	33.75	45
	(80× 9/40)	(150× 9/40)	(200× 9/40)
Total cost per unit (₹)	**548**	**603.75**	**1125**

(ii) Calculation of Cost-Driver level under Activity Based Costing

	Zm	Rm	Pm	Total
Quantity (units)	6,000	7,200	9,840	-
No. of orders (to be rounded off for fraction)	200 (6,000 / 30)	240 (7,200 / 30)	328 (9,840 / 30)	768
No. of production runs	120 (6,000 / 50)	144 (7,200 / 50)	197 (9,840 / 50)	461
No. of Inspections (done for each production run)	120	144	197	461
Maintenance hours	4,000	2,000	4,000	10,000

Calculation of Cost-Driver rate

Activity	Budgeted Cost (₹)	Cost-driver level	Cost Driver rate (₹)
	(a)	(b)	(c) = (a) / (b)
Material procurement	2,50,000	768	325.5
Set-up	1,50,000	461	325.5
Quality control	1,00,000	461	217.0
Maintenance	3,00,000	10,000	30.0

Calculation of total cost of products using Activity Based Costing

Particulars	Product		
	Zm (₹)	Rm (₹)	Pm (₹)
Direct Material	450	420	880
Direct Labour	80	150	200
Prime Cost per unit (A)	530	570	1080
Material procurement	10.85 (325.5×200/6000)	10.85 (325.5×240/7200)	10.85 (325.5×328/9840)
Set-up	6.51 (325.5×120/6000)	6.51 (325.5×144/7200)	6.51 (325.5×196.8/9840)
Quality control	4.34 (217×120/6000)	4.34 (217×144/7200)	4.34 (217×196.8/9840)
Maintenance	20.0 (4000×30/6000)	8.3 (2000×30/7200)	12.2 (4000×30/9840)
Overhead Cost per unit (B)	41.7	30.0	33.9
Total Cost per unit (A + B)	**571.7**	**600.0**	**1113.9**

Question 18

A Drug Store is presently selling three types of drugs namely 'Drug A', 'Drug B' and 'Drug C'. Due to some constraints, it has decided to go for only one product line of drugs. It has provided the following data for year 2020-21 for each product line:

	Drugs Types		
	A	B	C
Revenues (in ₹)	74,50,000	1,11,75,000	1,86,25,000
Cost of goods sold (in ₹)	41,44,500	68,16,750	1,20,63,750
Number of purchase orders placed (in nos.)	560	810	630
Number of deliveries received	950	1,000	850
Hours of shelf-stocking time	900	1,250	2,350
Units sold (in Nos.)	1,75,200	1,50,300	1,44,500

Following additional information is also provided:

Activity	Description of activity	Total Cost (₹)	Cost-allocation base
Drug License fee	Drug License fee	5,00,000	To be distributed in ratio 2:3:5 between A, B and C
Ordering	Placing of orders for purchases	8,30,000	2,000 purchase orders
Delivery	Physical delivery and receipt of foods	18,20,000	2,800 deliveries
Shelf stocking	Stocking of goods	32,40,000	4,500 hours of shelf- stocking time
Customer Support	Assistance provided to customers	28,20,000	4,70,000 units sold

You are required to:

(i) Calculate the operating income and operating income as a percentage (%) of revenue of each product line if:

(a) All the support costs (Other than cost of goods sold) are allocated in the ratio of cost of goods

sold.

(b) All the support costs (Other than cost of goods sold) are allocated using activity-based costing system.

(ii) Give your opinion about choosing the product line on the basis of operating income as a percentage (%) of revenue of each product line under both the situations as above. *(PYP 10 Marks Dec'21)*

Answer 18

(i) (a) Statement of Operating income and Operating income as a percentage of revenues for each product line

(When support costs are allocated to product lines on the basis of cost of goods sold of each product)

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Revenues: (A)	74,50,000	1,11,75,000	1,86,25,000	3,72,50,000
Cost of Goods sold (COGS): (B)	41,44,500	68,16,750	1,20,63,750	2,30,25,000
Support cost (40% of COGS): (C) (Refer working notes)	16,57,800	27,26,700	48,25,500	92,10,000
Total cost: (D) = {(B) + (C)}	58,02,300	95,43,450	1,68,89,250	3,22,35,000
Operating income: E = {(A)-(D)}	16,47,700	16,31,550	17,35,750	50,15,000
Operating income as a % of revenues: (E/A) × 100)	22.12%	14.60%	9.32%	13.46%

Working notes:

1. **Total support cost:**

	(₹)
Drug Licence Fee	5,00,000
Ordering	8,30,000
Delivery	18,20,000
Shelf stocking	32,40,000
Customer support	28,20,000
Total support cost	92,10,000

2. **Percentage of support cost to cost of goods sold (COGS):**

$$= \frac{\text{Total support cost}}{\text{Total cost of goods sold}} \times 100 = \frac{\text{Rs.92,10,000}}{\text{Rs.2,30,25,000}} \times 100 = 40\%$$

3. **Cost for each activity cost driver:**

Activity (1)	Total cost (₹) (2)	Cost allocation base (3)	Cost driver rate (4) = [(2) ÷ (3)]
Ordering	8,30,000	2,000 purchase orders	₹ 415 per purchase order
Delivery	18,20,000	2,800 deliveries	₹ 650 per delivery
Shelf-stocking	32,40,000	4,500 hours	₹ 720 per stocking hour
Customer support	28,20,000	4,70,000 units sold	₹ 6 per unit sold

(b) Statement of Operating income and Operating income as a percentage of revenues for each product line

(When support costs are allocated to product lines using an activity-based costing system)

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Revenues: (A)	74,50,000	1,11,75,000	1,86,25,000	3,72,50,000
Cost & Goods sold	41,44,500	68,16,750	1,20,63,750	2,30,25,000
Drug Licence Fee	1,00,000	1,50,000	2,50,000	5,00,000
Ordering cost* (560:810:630)	2,32,400	3,36,150	2,61,450	8,30,000
Delivery cost* (950:1000:850)	6,17,500	6,50,000	5,52,500	18,20,000
Shelf stocking cost* (900:1250:2350)	6,48,000	9,00,000	16,92,000	32,40,000
Customer Support cost* (175200:150300:144500)	10,51,200	9,01,800	8,67,000	28,20,000
Total cost: (B)	67,93,600	97,54,700	1,56,86,700	3,22,35,000
Operating income C: {(A) - (B)}	6,56,400	14,20,300	29,38,300	50,15,000

Operating income as a % of revenues	8.81%	12.71%	15.78%	13.46%

* Refer to working note 3

(ii) Comparison on the basis of operating income as per the percentage (%) of revenue:

(a) When support costs are allocated to product lines on the basis of cost of goods sold of each product

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Operating income as a % of revenues	22.12%	14.60%	9.32%	13.46%

On comparing the operating income as a % of revenue of each product, Drug A is the most profitable product line, though its revenue is least but with highest units sold.

(b) When support costs are allocated to product lines using an activity -based costing system

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Operating income as a % of revenues	8.81%	12.71%	15.78%	13.46%

On comparing the operating income as a % of revenue of each product, Drug C is the most profitable product line, though its unit sold is least but with highest revenue.

EXAM INSIGHTS: This Numerical Question tested the knowledge of examinees on the topic Activity Based Costing. The first part of the question required apportionment of overheads cost on the basis of cost of goods sold ratio and to calculate income as percentage of revenue for three products. In the second part, allocation of overheads based on activity based cost drivers and to calculate income as percentage of revenue for three products. Finally choose the best product in both methods on the basis of income as percentage of revenue. Most of the students answered will in the second part of the question. Performance of the examinees was good.

Question 19

Star Limited manufacture three products using the same production methods. A conventional product costing system is being used currently. Details of the three products for a typical period are:

Product	Labour Hrs. per unit	Machine Hrs. per unit	Materials per Unit[1]	Volume in Units
AX	1.00	2.00	35	7,500
BX	0.90	1.50	25	12,500
CX	1.50	2.50	45	25,000

Direct Labour costs ₹ 20 per hour and production overheads are absorbed on a machine hour basis. The overhead absorption rate for the period is ₹ 30 per machine hour.

Management is considering using Activity Based Costing system to ascertain the cost of the products. Further analysis shows that the total production overheads can be divided as follows:

Particulars	%
Cost relating to set-ups	40
Cost relating to machinery	10
Cost relating to material handling	30
Costs relating to inspection	20
Total production overhead	100

The following activity volumes are associated with the product line for the period as a whole. Total activities for the period:

Product	No. of set-ups	No. of movements of Materials	No. of inspections
AX	350	200	200
BX	450	280	400
CX	740	675	900
Total	1,540	1,155	1,500

Required:

(i) Calculate the cost per unit for each product using the conventional method.

(ii) **Calculate the cost per unit for each product using activity based costing method.**
(PYP 10 Marks May'22)

Answer 19

i. Statement showing "Cost per unit" using "conventional method"

Particulars of Costs	AX	BX	CX
	(₹)	(₹)	(₹)
Direct Materials	35	25	45
Direct Labour	20	18	30
Production Overheads	60	45	75
Cost per unit	115	88	150

ii. Statement Showing "Cost per unit using "Activity Based Costing"

Products	AX	BX	CX
Production (units)	7,500	12,500	25,000
	(₹)	(₹)	(₹)
Direct Materials	2,62,500	3,12,500	11,25,000
Direct Labour	1,50,000	2,25,000	7,50,000
Machine Related Costs	**45,000**	**56,250**	**1,87,500**
Setup Costs	2,62,500	3,37,500	5,55,000
Material handling Cost	1,50,000	2,10,000	5,06,250
Inspection Costs	77,000	1,54,000	3,46,500
Total Costs	9,47,000	12,95,250	34,70,250
Cost per unit (Total Cost ÷ Units)	126.267	103.62	138.81

Working Notes:

Calculation of Total Machine hours

Particulars	AX	BX	CX
(A) Machine hours per unit	2	1.5	2.5
(B) Production (units)	7,500	12,500	25,000
(C) Total Machine hours (A× B)	15,000	18,750	62,500

Total Machine hours = 96,250

Total Production overheads = 96,250 × 30 = ₹ 28,87,500

Calculation of Cost Driver Rate

Cost Pool	%	Overheads (₹)	Cost Driver (Basis)	Cost Driver (Units)	Cost Driver Rate (₹)
Set up	40	11,55,000	No of set ups	1,540	750 per set up
Machine Operation	10	2,88,750	Machine hours	96,250	3 per machine hour
Material Handling	30	8,66,250	No of material movement	1,155	750 per material movement
Inspection	20	5,77,500	No of inspection	1,500	385 per inspection

[1] **Material cost per unit**

EXAM INSIGHTS: This numerical question tested the knowledge of examinees on the topic Activity Based Costing. The first part of the question required apportionment of overheads cost on the basis of machine hours and to calculate cost per unit for the products by using conventional method. In the second part, examinees were required to allocate overheads based on activity-based cost drivers and to calculate income/ cost per unit for the products. Most of the examinees answered well. Performance of the examinees was good.

Question 20

XYZ Ltd. is engaged in manufacturing two products- Express Coffee and Instant Coffee. It furnishes the following data for a year:

Product	Actual Output (units)	Total Machine hours	Total Number of Purchase orders	Total Number of set ups
Express Coffee	5,000	20,000	160	20
Instant Coffee	60,000	1,20,000	384	44

The annual overheads are as under:

Particulars	₹
Machine Processing costs Set up	7,00,000
related costs	7,68,000
Purchase related costs	6,80,000

You are required to:

(i) **Compute the costs allocated to each product – Express Coffee and Instant Coffee from each activity on the basis of Activity- Based Costing (ABC) method.**

(ii) **Find out the overhead cost per unit of each product – Express coffee and Instant coffee based on (i) above.** ***(PYP 4 Marks Nov'22)***

Answer 20

(i) Estimation of Cost-Driver rate

Activity	Overhead cost (₹)	Cost-driver level	Cost driver rate (₹)
Machine processing	7,00,000	1,40,000 Machine hours	5
Set up Costs	7,68,000	64 Number of set up	12,000
Purchase related Costs	6,80,000	544 Number of purchase order	1250

Cost Allocation under Activity based Costing

	Express Coffee (₹)	Instant Coffee (₹)
Overhead Cost		
Machine processing (Cost Driver rate - ₹ 5) (or 20,000:1,20,000)	5 × 20,000 = 1,00,000	5 × 1,20,000 = 6,00,000
Set up Costs (Cost Driver rate - ₹ 12,000)) (or 20:44)	12,000 × 20 = 2,40,000	12,000 × 44 = 5,28,000
Purchase related Costs (Cost Driver rate - ₹ 1250) (or 160:384)	1,250 × 160 = 2,00,000	1,250 × 384 = 4,80,000
Total overhead cost	5,40,000	16,08,000

(ii) Overhead Cost per unit

Per unit Overhead cost	(₹)	(₹)
5,40,000 /5,000	108	
16,08,000/60,000		26.80

EXAM INSIGHTS: This Practical problem to test the knowledge of examinees on the topic Activity Based Costing. First part required computation of costs allocated to each product based on activity- based costing method while second part required computation of overhead cost per unit of each product. Examinees solved this problem meticulously and secured good marks.

Question 21

JH Plastics Limited manufactures three products S, M and L. To date, simple traditional absorption costing system has been used to allocate overheads to products. Total production overheads are allocated on the basis of machine hours. The machine hour rate for allocating production overheads is ₹ 240 per machine hour under the traditional absorption costing system. Selling prices are calculated by adding mark up of 40% of the product cost. Information related to products for the most recent year is as under:

	Products		
	S	M	L
Units produced and sold	7,500	12,500	9,000
Direct material cost per unit (₹)	158	179	250
Direct labour cost per unit (₹)	40	45	60
Machine hours per unit	0.30	0.45	0.50
Number of Machine setups	120	120	160
Number of purchase orders	90	135	125
Number of inspections	100	160	140

The management wishes to introduce activity-based method (ABC) system of attributing production overheads to products and has identified major cost pools for production overheads and their associated cost drivers as follows:

Cost pool	Amount	Cost driver
Purchasing Department Cost	₹ 7,00,000	Number of Purchase orders
Machine setup Cost	₹ 9,00,000	Number of Machine setups
Quality Control Cost	₹ 6,56,000	Number of inspections
Machining Cost	₹ 5,64,000	Machine hours

Required:

(i) **Calculate the total cost per unit and selling price per unit for each of the three products using:**
   (a) **The traditional costing approach currently used by JH Plastics Limited;**
   (b) **Activity based costing (ABC) approach.**

(ii) **Calculate the difference in selling price per unit as per (a) and (b) above and show which product is underpriced or over-priced.** ***(PYP 10 Marks Nov'23)***

Answer 21

i. **Statement showing 'Cost per unit & Selling price per unit – Traditional Method'.**

Particular	Products		
	S (₹)	M (₹)	L (₹)
Direct material cost per unit	158	179	250
Direct labour cost per unit	40	45	60
Production overhead @ ₹ 240 per machine hour	72 (₹ 240 x 0.3)	96 (₹ 240 x 0.4)	120 (₹ 240 x 0.5)
Cost per unit	270	320	430
Add: Profit @ 40%	108	128	172
Selling price per unit	378	448	602

(b) Statement showing 'Cost per unit & Selling price per unit – Activity Based Costing'.

Particular	Activity Drivers	Total Amount (₹)	Products		
			S	M	L
Production (units)	-	-	7500	12500	9000
Machine hours	-	-	2250 (7500 x 0.3) (₹)	5000 (12500 x 0.4) (₹)	4500 (9000 x 0.5) (₹)
Direct material cost per unit (i)			158	179	250
Direct labour cost per unit (ii)			40	45	60

Overheads					
Purchasing department cost (90:135:125)	Number of purchase orders	7,00,000	1,80,000	2,70,000	2,50,000
Machine setup cost (120:120:160)	Number of machine setups	9,00,000	2,70,000	2,70,000	3,60,000
Quality control cost (100:160:140)	Number of inspections	6,56,000	1,64,000	2,62,400	2,29,600
Machining cost (225:500:450)	Machine hours	5,64,000	1,08,000	2,40,000	2,16,000
Total Overhead			7,22,000	10,42,400	10,55,600
Overhead Cost per unit (iii)			96.27	83.39	117.29
Total Cost per unit (i+ii+iii)			**294.27**	**307.39**	**427.29**
Add: Profit @ 40%			117.71	122.96	170.92
Selling price per unit			**411.98**	**430.35**	**598.21**

Note: The question may also be solved by calculating cost driver rate & allocating various cost based on cost driver rate. However, there will be no change in any of the answer.

ii.

Particular	**Products**		
	S (₹)	**M (₹)**	**L (₹)**
Selling price per unit as per Traditional Costing	378	448	602
Selling price per unit as per Activity Based Costing	411.98	430.35	598.21
Difference	**(33.98)**	**17.65**	**3.79**

Product S is underpriced while product M and L is overpriced using Traditional costing approach.

EXAM INSIGHTS: Question on Activity Based costing which required calculation of cost per unit and selling price per unit for each of the three products using Absorption costing approach and Activity based costing approach. The question also required calculation of difference in selling price under both approaches and show which product is under-priced or over-priced. Overall performance of the examinees was **above average.**

Question 22

LDR

Alpha Limited has decided to analyse the profitability of its five new customers. It buys bottled water at ₹ 90 per case and sells to retail customers at a list price of ₹ 108 per case. The data pertaining to five customers are:

	Customers				
	A	**B**	**C**	**D**	**E**
Cases sold	4,680	19,688	1,36,800	71,550	8,775
Listed Selling Price	₹ 108	₹ 108	₹ 108	₹ 108	₹ 108
Actual Selling Price	₹ 108	₹ 106.20	₹ 99	₹ 104.40	₹ 97.20
Number of Purchaseorders	15	25	30	25	30
Number of Customervisits	2	3	6	2	3
Number of deliveries	10	30	60	40	20
Kilometers travelledper delivery	20	6	5	10	30
Number of expedited deliveries	0	0	0	0	1

Its five activities and their cost drivers are:

Activity	**Cost Driver Rate**
Order taking	₹ 750 per purchase order
Customer visits	₹ 600 per customer visit
Deliveries	₹ 5.75 per delivery Km travelled
Product handling	₹ 3.75 per case sold
Expedited deliveries	₹ 2,250 per expedited delivery

Required:

(i) COMPUTE the customer-level operating income of each of five retailcustomers now being examined (A, B, C, D and E). Comment on the results.

(ii) STATE what insights are gained by reporting both the list selling priceand the actual selling price for each customer? *(SM)(Same concept different figures MTP 10 Marks, Oct'21, PYP Nov'19, 10 Marks, MTP 10 Marks Oct'22, RTP May '24)*

Answer 22

Working note:

Computation of revenues (at listed price), discount, cost of goods soldand customer level operating activities costs:

	Customers				
	A	**B**	**C**	**D**	**E**
Cases sold: (a)	4,680	19,688	1,36,800	71,550	8,775
Revenues (at listed price)(₹): (b) {(a) × ₹ 108)}	5,05,440	21,26,304	1,47,74,400	77,27,400	9,47,700
Discount(₹): (c) {(a) × Discount percase}	-	35,438 (19,688 cases × ₹ 1.80)	12,31,200 (1,36,800 cases × ₹ 9)	2,57,580 (71,550 cases × ₹ 3.60)	94,770 (8,775 cases × ₹ 10.80)
Cost of goodssold (₹) : (d) {(a) × ₹ 90}	4,21,200	17,71,920	1,23,12,000	64,39,500	7,89,750
Customer level operating activities costs					
Order takingcosts (₹): (No. of Purchase × ₹750)	11,250	18,750	22,500	18,750	22,500
Customer visits costs (₹) (No. of customer visits × ₹ 600)	1,200	1,800	3,600	1,200	1,800
Delivery vehicles travel costs (₹) (₹ 5.75 perkm) (Kms travelled by delivery vehicles × ₹ 5.75 per km.)	1,150 (5.75 x 10x 20)	1,035 (5.75 x 30 x 6)	1,725 (5.75 x 60x 5)	2,300 (5.75 x 40 x 10)	3,450 (5.75 x 20 x 30)
Product handlingcosts (₹) {(a) ×₹ 3.75}	17,550	73,830	5,13,000	2,68,313	32,906
Cost of expediting deliveries (₹) {No. of expedited deliveries × ₹2,250}	-	-	-	-	2,250
Total cost ofcustomer level operating activities (₹)	31,150	95,415	5,40,825	2,90,563	62,906

(i) Computation of Customer level operating income

	Customers				
	A (₹)	**B (₹)**	**C (₹)**	**D (₹)**	**E (₹)**
Revenues (At list price) (Refer to working note)	5,05,440	21,26,304	1,47,74,400	77,27,400	9,47,700

Less: Discount (Refer to working note)	-	35,438	12,31,200	2,57,580	94,770
Revenue (At actual price)	**5,05,440**	**20,90,866**	**1,35,43,200**	**74,69,820**	**8,52,930**
Less: Cost of goods sold (Refer to working note)	4,21,200	17,71,920	1,23,12,000	64,39,500	7,89,750
Gross margin	84,240	3,18,946	12,31,200	10,30,320	63,180
Less: Customer level operating activities costs (Refer to working note)	31,150	95,415	5,40,825	2,90,563	62,906
Customer level operating income	53,090	2,23,531	6,90,375	7,39,757	274

Comment on the results:

Customer D is the most profitable customer. D's profits are even higher than C (whose revenue is the highest) despite having only 52.30% ofthe unit volume of customer C. The main reason is that C receives a discount of ₹ 9 per case while customer D receives only a ₹ 3.60 discount per case.

Customer E is the least profitable. The profits of E is even less than A (whose revenue is least) Customer E received a discount of ₹ 10.80 per case, makes more frequent orders, requires more customer visits and requires more delivery kms. in comparison with customer A.

(ii) Insight gained by reporting both the list selling price and the actual selling price for each customer:

Separate reporting of both-the listed and actual selling prices enables Alpha Ltd. to examine which customer has received what discount per case, whether the discount received has any relationship with the sales volume. The data given below provides us with the following information;

Sales volume	Discount per case (₹)
C (1,36,800 cases)	9.00
D (71,550 cases)	3.60
B (19,688 cases)	1.80
E (8,775 cases)	10.80
A (4,680 cases)	0

The above data clearly shows that the discount given to customers per case has a direct relationship with sales volume, except in the case of customer E. The reasons for ₹ 10.80 discount per case for customer E should be explored.

EXAM INSIGHTS: This was a numerical problem from the topic 'Concepts of Activity Based Costing (ABC)' which required preparing customer level operating income using cost driver rates and examining the result and commenting on the customer by comparison of result/ other parameters. Performance of the examinees was above average.

Question 23

LDR

RST Limited specializes in the distribution of pharmaceutical products. It buys from the pharmaceutical companies and resells to each of the three different markets.

(i) General Supermarket Chains

(ii) Drugstore Chains

(iii) Chemist Shops

The following data for the month of April in respect of RST Limited has beenreported:

	General Supermarket Chains (₹)	Drugstore Chains (₹)	Chemist Shops (₹)
Average revenue per delivery	84,975	28,875	5,445

Average cost of goods sold perdelivery	82,500	27,500	4,950
Number of deliveries	330	825	2,750

In the past, RST Limited has used gross margin percentage to evaluate therelative profitability of its distribution channels. The company plans to use activity –based costing for analysing theprofitability of its distribution channels.

The Activity analysis of RST Limited is as under:

Activity Area	Cost Driver
Customer purchase order processing	Purchase orders by customers
Line-item ordering	Line-items per purchase order
Store delivery	Store deliveries
Cartons dispatched to stores	Cartons dispatched to a store perdelivery
Shelf-stocking at customer store	Hours of shelf-stocking

The April month's operating costs (other than cost of goods sold) of RST Limited are ₹ 8,27,970. These operating costs are assigned to five activity areas. The cost in each area and the quantity of the cost allocation basis usedin that area for the month of April are as follows:

Activity Area	Total costs (₹)	Total Units of CostAllocation Base
Customer purchase orderprocessing	2,20,000	5,500 orders
Line-item ordering	1,75,560	58,520 line items
Store delivery	1,95,250	3,905 store deliveries
Cartons dispatched tostore	2,09,000	2,09,000 cartons
Shelf-stocking atcustomer store	28,160	1,760 hours

Other data for the month of April include the following:

	General Supermarket Chains	Drugstore Chains	Chemist Shops
Total number of orders	385	990	4,125
Average number of line itemsper order	14	12	10
Total number of store deliveries	330	825	2,750
Average number of cartonsshipped per store delivery	300	80	16
Average number of hours of shelf-stocking per storedelivery	3	0.6	0.1

Required:

(i) COMPUTE gross-margin percentage for each of its three distributionchannels and compute RST Limited's operating income.

(ii) COMPUTE the rate per unit of the cost-allocation base for each of thefive activity areas.

(iii) COMPUTE the operating income of each distribution channel using the activity-based costing information. Comment on the results. What new insights are available with the activity-based cost information?

(iv) DESCRIBE four challenges one would face in assigning the total operating costs of ₹ 8,27,970 to five activity areas. (SM) (Same concept different figures RTP May'22) (MTP 10 Marks Sep'23)

Answer 23

(i) RST Limited's

Statement of operating income and gross margin percentagefor each of its three distribution channel

Particulars	General Super Market Chains	Drugstore Chains	Chemist Shops	Total
Revenues: (₹)	2,80,41,750 (330 × ₹ 84,975)	2,38,21,875 (825 × ₹ 28,875)	1,49,73,750 (2,750 × ₹ 5,445)	6,68,37,375
Less: Cost of goods sold: (₹)	2,72,25,000 (330 × ₹ 82,500)	2,26,87,500 (825 × ₹ 27,500)	1,36,12,500 (2,750 × ₹ 4,950)	635,25,000
Gross Margin:(₹)	8,16,750	11,34,375	13,61,250	33,12,375
Less: Otheroperating costs: (₹)				8,27,970

Operating income:(₹)				24,84,405
Gross Margin	2.91%	4.76 %	9.09%	4.96%
Operatingincome %				3.72

(ii) Computation of rate per unit of the cost allocation base foreach of the five activity areas for the month of April

	(₹)
Customer purchase order processing(₹ 2,20,000/ 5,500 orders)	40 per order
Line item ordering (₹ 1,75,560/ 58,520 line items)	3 per line item order
Store delivery (₹ 1,95,250/ 3,905 store deliveries)	50 per delivery
Cartons dispatched (₹ 2,09,000/ 2,09,000 dispatches)	1 per dispatch
Shelf-stocking at customer store (₹)(₹ 28,160/ 1,760 hours)	16 Per hour

(iii) Operating Income Statement of each distribution channel in April (Using the Activity based Costing information)

	General Super Market Chains	Drugstore Chains	Chemist Shops
Gross margin (₹) : (A) (Refer to (i) part of the answer)	8,16,750	11,34,375	13,61,250
Operating cost (₹): (B) (Refer to working note)	1,62,910	1,90,410	4,74,650
Operating income (₹): (A–B)	6,53,840	9,43,965	8,86,600
Operating income (in %) (Operating income/Revenue) ×100	2.33	3.96	5.92

Comments and new insights: The activity-based cost information highlights, how the 'Chemist Shops' uses a larger amount of RST Ltd.'s resources per revenue than do the other two distribution channels. Ratio of operating costs to revenues, across these markets is:

General supermarket chains (₹ 1,62,910/ ₹ 2,80,41,750) × 100	0.58%
Drug store chains (₹ 1,90,410/ ₹ 2,38,21,875) × 100	0.80%
Chemist shops (₹ 4,74,650/ ₹ 1,49,73,750) ×100	3.17%

Working note:

Computation of operating cost of each distribution channel:

	GeneralSuper MarketChains (₹)	Drugstore Chains (₹)	Chemist Shops (₹)
Customer purchase order processing	15,400 (₹ 40 × 385 orders)	39,600 (₹ 40 × 990 orders)	1,65,000 (₹ 40 ×4125 orders)
Line itemordering	16,170 (₹ 3 × 14 x 385)	35,640 (₹ 3 × 12 x 990)	1,23,750 (₹ 3 × 10 × 4125)
Store delivery	16,500 (₹ 50 × 330 deliveries)	41,250 (₹ 50 × 825 deliveries)	1,37,500 (₹ 50 × 2750 deliveries)
Cartons dispatched	99,000 (₹1× 300 cartons × 300 deliveries)	66,000 (₹1 × 80 cartons × 825 deliveries)	44,000 (₹1 × 16 cartons × 2,750 deliveries)
Shelf stocking	15,840 (₹ 16 × 330 deliveries × 3 Av. hrs.)	7,920 (₹ 16 × 825 deliveries × 0.6 Av. hrs)	4,400 (₹ 16 × 2,750 deliveries × 0.1 Av. hrs)
Operating cost	1,62,910	1,90,410	4,74,650

(iv) Challenges faced in assigning total operating cost of ₹ 8,27,970:

- Choosing an appropriate cost driver for activity area.
- Developing a reliable data base for the chosen cost driver.
- Deciding, how to handle costs that may be common across several activities.
- Choice of the time period to compute cost rates per cost driver.
- Behavioral factors.

Question 24

Wool mark Ltd. manufactures three types of products namely P, Q and R. The data relating to a period are as under:

Particulars	P	Q	R
Machine hours per unit	10	18	14
Direct Labour hours per unit @ Rs. 20	4	12	8
Direct Material per unit (Rs.)	90	80	120
Production (units)	3,000	5,000	20,000

Currently the company uses traditional costing method and absorbs all production overheads on the basis of machine hours. The machine hour rate of overheads is Rs. 6 per hour. The company proposes to use activity based costing system and the activity analysis is as under:

Particulars	P	Q	R
Batch size (units)	150	500	1,000
Number of purchase orders per batch	3	10	8
Number of inspections per batch	5	4	3

The total production overheads are analyzed as under:

Machine set up costs	20%
Machine operation costs	30%
Inspection costs	40%
Material procurement related costs	10%

Required:

(i) Calculate the cost per unit of each product using traditional method of absorbing all production overheads on the basis of machine hours.

(ii) Calculate the cost per unit of each product using activity based costing principles.

(MTP Oct'18, 10 Marks, SM) (Same concept different figures MTP 10 Marks Mar'22)

Answer 24

(i) Statement Showing "Cost per unit - Traditional Method"

Particulars of Costs	P	Q	R
	(Rs.)	(Rs.)	(Rs.)
Direct Materials	90	80	120
Direct Labour [(4, 12, 8 hours) X Rs.20]	80	240	160
Production Overheads [(10, 18, 14 hours) X Rs.6]	60	108	84
Cost per unit	230	428	364

(ii) Statement Showing "Cost per unit - Activity Based Costing"

Products	P	Q	R
Production (units)	3,000	5,000	20,000
	(Rs.)	(Rs.)	(Rs.)
Direct Materials (90, 80, 120)	2,70,000	4,00,000	24,00,000
Direct Labour (80, 240, 160)	2,40,000	12,00,000	32,00,000
Machine Related Costs @ Rs.1.80 per hour (30,000, 90,000, 2,80,000)	54,000	1,62,000	5,04,000
Setup Costs @ Rs.9,600 per setup (20, 10, 20)	1,92,000	96,000	1,92,000
Inspection Costs @ Rs.4,800 per inspection (100, 40, 60)	4,80,000	1,92,000	2,88,000
Purchase Related Costs @ Rs.750 per purchase (60, 100, 160)	45,000	75,000	1,20,000
Total Costs	12,81,000	21,25,000	67,04,000
Cost per unit (Total Cost ÷Units)	427.00	425.00	335.20

Workings

Number of Batches, Purchase Orders, and Inspections-

	Particulars	P	Q	R	Total
A.	Production (units)	3,000	5,000	20,000	
B.	Batch Size (units)	150	500	1,000	
C.	Number of Batches [A ÷B]	20	10	20	50
D.	Number of Purchase Order per batch	3	10	8	
E.	Total Purchase Orders [C ÷ D]	60	100	160	320
F.	Number of Inspections per batch	5	4	3	
G.	Total Inspections [C ÷ F]	100	40	60	200

Total Machine Hours-

	Particulars	P	Q	R
A.	Machine Hours per unit	10	18	14
B.	Production (units)	3,000	5,000	20,000
C.	Total Machine Hours [A × B]	30,000	90,000	2,80,000

Total Machine Hours = 4,00,000

Total Production Overheads-

= 4,00,000 hrs. X Rs. 6 = Rs. 24,00,000

Cost Driver Rates-

Cost Pool	%	Overheads (Rs.)	Cost Driver (Units)	Cost Driver Rate (Rs.)
Setup	20%	4,80,000	50	9,600 per Setup
Inspection	40%	9,60,000	200	4,800 per Inspection
Purchases	10%	2,40,000	320	750 per Purchase
Machine Hours	30%	7,20,000	4,00,000	1.80 per Machine Hour

Question 25

The following budgeted information relates to Su Ltd. for the year 2021:

	Products		
	X	Y	Z
Production and Sales (units)	1,00,000	80,000	60,000
	(₹)	(₹)	(₹)
Selling price per unit	45	90	70
Direct cost per unit	25	45	50
	Hours	Hours	Hours
Machine department (machine hours per unit)	3	4	5
Assembly department (direct labour hours per unit)	6	4	3

The estimated overhead expenses for the year 2021 will be as below:

Machine Department ₹ 36,80,000

Assembly Department ₹ 27,50,000

Overhead expenses are apportioned to the products on the following basis:

Machine Department On the basis of machine hours

Assembly Department On the basis of labour hours

After a detailed study of the activities the following cost pools and their respective cost drivers are found:

Cost Pool	Amount (₹)	Cost Driver	Quantity
Machining services	32,20,000	Machine hours	9,20,000 hours
Assembly services	22,00,000	Direct labour hours	11,00,000 hours
Set-up costs	4,50,000	Machine set-ups	9,000 set-ups

Order processing	3,60,000	Customer orders	7,200 orders
Purchasing	2,00,000	Purchase orders	800 orders

As per an estimate the activities will be used by the three products:

	Products		
	X	Y	Z
Machine set-ups	4,500	3,000	1,500
Customer orders	2,200	2,400	2,600
Purchase orders	300	350	150

You are required to PREPARE a product-wise profit statement using:

(i) Absorption costing method;

(ii) Activity-based method. *(MTP 10 Marks Nov'21, RTP May'21, MTP 8 Marks Mar'24)*

Answer 25

(i) Profit Statement using Absorption costing method:

	Particulars	Product			Total
		X	Y	Z	
A.	Sales Quantity	1,00,000	80,000	60,000	2,40,000
B.	Selling price per unit (₹)	45	90	70	
C.	Sales Value (₹) [A×B]	**45,00,000**	**72,00,000**	**42,00,000**	**1,59,00,000**
D.	Direct cost per unit (₹)	25	45	50	
E.	Direct Cost (₹) [A×D]	25,00,000	36,00,000	30,00,000	91,00,000
F.	Overheads:				
(i)	Machine department (₹) (Working note-1)	12,00,000	12,80,000	12,00,000	36,80,000
(ii)	Assembly department (₹) (Working note-1)	15,00,000	8,00,000	4,50,000	27,50,000
G.	Total Cost (₹) [E+F]	**52,00,000**	**56,80,000**	**46,50,000**	**1,55,30,000**
H.	**Profit (C-G)**	**(7,00,000)**	**15,20,000**	**(4,50,000)**	**3,70,000**

(ii) Profit Statement using Activity based costing (ABC) method:

	Particulars	Product			Total
		X	Y	Z	
A.	Sales Quantity	1,00,000	80,000	60,000	
B.	Selling price per unit (₹)	45	90	70	
C.	**Sales Value (₹) [A×B]**	**45,00,000**	**72,00,000**	**42,00,000**	**1,59,00,000**
D.	Direct cost per unit (₹)	25	45	50	
E.	Direct Cost (₹) [A×D]	25,00,000	36,00,000	30,00,000	91,00,000
F.	Overheads: (Refer working note - 3)				
(i)	Machining services (₹)	10,50,000	11,20,000	10,50,000	32,20,000
(ii)	Assembly services (₹)	12,00,000	6,40,000	3,60,000	22,00,000
(iii)	Set-up costs (₹)	2,25,000	1,50,000	75,000	4,50,000
(iv)	Order processing (₹)	1,10,000	1,20,000	1,30,000	3,60,000
(v)	Purchasing (₹)	75,000	87,500	37,500	2,00,000
G.	**Total Cost (₹) [E+F]**	**51,60,000**	**57,17,500**	**46,52,500**	**1,55,30,000**
H.	**Profit (₹) (C-G)**	**(6,60,000)**	**14,82,500**	**(4,52,500)**	**3,70,000**

Working Notes:

1.

		Products			
		X	Y	Z	Total
A.	Production (units)	1,00,000	80,000	60,000	
B.	Machine hours per unit	3	4	5	

C.	Total Machine hours [A×B]	3,00,000	3,20,000	3,00,000	9,20,000
D.	Rate per hour (₹)	4	4	4	
E.	**Machine Dept. cost [C×D]**	**12,00,000**	**12,80,000**	**12,00,000**	**36,80,000**
F.	Labour hours per unit	6	4	3	
G.	Total labour hours [A×F]	6,00,000	3,20,000	1,80,000	11,00,000
H.	Rate per hour (₹)	2.5	2.5	2.5	
I	**Assembly Dept. cost [G×H]**	**15,00,000**	**8,00,000**	**4,50,000**	**27,50,000**

Machine hour rate = $\frac{\text{Rs.36,80,000}}{\text{9,20,000 hours}}$ = ₹ 4

Labour hour rate = $\frac{\text{Rs.27,50,000}}{\text{11,00,000 hours}}$ = ₹ 2.5

2. Calculation of cost driver rate

Cost Pool	Amount (₹)	Cost Driver	Quantity	Driver rate (₹)
Machining services	32,20,000	Machine hours	9,20,000 hours	3.50
Assembly services	22,00,000	Direct labour hours	11,00,000 hours	2.00
Set-up costs	4,50,000	Machine set-ups	9,000 set-ups	50.00
Order processing	3,60,000	Customer orders	7,200 orders	50.00
Purchasing	2,00,000	Purchase orders	800 orders	250.00

3. Calculation of activity-wise cost

		Products			
		X	Y	Z	Total
A.	Machining hours (Refer Working note-1)	3,00,000	3,20,000	3,00,000	9,20,000
B.	Machine hour rate (₹) (Refer Working note2)	3.5	3.5	3.5	
C.	**Machining services cost (₹) [A×B]**	**10,50,000**	**11,20,000**	**10,50,000**	**32,20,000**
D.	Labour hours (Refer Working note-1)	6,00,000	3,20,000	1,80,000	11,00,000
E.	Labour hour rate (₹) (Refer Working note-2)	2	2	2	
F.	**Assembly services cost (₹) [D×E]**	**12,00,000**	**6,40,000**	**3,60,000**	**22,00,000**
G.	Machine set-ups	4,500	3,000	1,500	9,000
H.	Rate per set-up (₹) (Refer Working note-2)	50	50	50	
I.	**Set-up cost (₹) [G×H]**	**2,25,000**	**1,50,000**	**75,000**	**4,50,000**
J.	Customer orders	2,200	2,400	2,600	7,200
K.	Rate per order (₹) (Refer Working note-2)	50	50	50	
L.	**Order processing cost (₹) [J×K]**	**1,10,000**	**1,20,000**	**1,30,000**	**3,60,000**
M.	Purchase orders	300	350	150	800
N.	Rate per order (₹) (Refer Working note-2)	250	250	250	
O.	**Purchasing cost (₹) [M×N]**	**75,000**	**87,500**	**37,500**	**2,00,000**

Question 26

LDR

SOFTHUG is a global brand created by Green-lush Ltd. The company manufactures three range of beauty soaps i.e. SOFTHUG- Gold, SOFTHUG- Pearl, and SOFTHUG- Diamond. The budgeted costs and production for the month of May, 2024 are as follows:

	SOFTHUG- Gold		SOFTHUG- Pearl		SOFTHUG- Diamond	
Production of soaps (Units)	4,000		3,000		2,000	
Resources per Unit:	Qty	Rate	Qty	Rate	Qty	Rate
- Essential Oils	60 ml	₹ 200/100 ml	55 ml	₹ 300/100 ml	65 ml	₹ 300/100 ml
- Cocoa Butter	20 g	₹ 200/100 g	20 g	₹ 200/100 g	20 g	₹ 200/100 g

- Filtered Water	30 ml	₹ 15/100 ml	30 ml	₹ 15/100 ml	30 ml	₹ 15/100 ml
- Chemicals	10 g	₹ 30/100 g	12 g	₹ 50/100 g	15 g	₹ 60/100 g
- Direct Labour	30 minutes	₹ 10/hour	40 minutes	₹ 10/hour	60 minutes	₹ 10 / hour

Green-lush Ltd. followed an Absorption Costing System and absorbed its production overheads, to its products using direct labour hour rate, which were budgeted at ₹ 1,98,000.

Now, Green-lush Ltd. is considering adopting an Activity Based Costing system. For this, additional information regarding budgeted overheads and their cost drivers is provided below:

Particulars	(₹)	Cost drivers
Forklifting cost	58,000	Weight of material lifted
Supervising cost	60,000	Direct labour hours
Utility cost	80,000	Number of Machine operations

The number of machine operators per unit of production are 5, 5, and 6 for SOFTHUG- Gold, SOFTHUG-Pearl, and SOFTHUG- Diamond respectively.

(Consider (i) Mass of 1 litre of Essential Oils and Filtered Water equivalent to 0.8 kg and 1 kg respectively (ii) Mass of output produced is equivalent to the mass of input materials taken together.)

You are required to:

(i) PREPARE a statement showing the unit costs and total costs of each product using the absorption costing method.

(ii) PREPARE a statement showing the product costs of each product using the ABC approach.

(iii) STATE what are the reasons for the different product costs under the two approaches? *(RTP Sep'24,SM)*

Answer 26

(i) Traditional Absorption Costing

	SOFTHUG- Gold	SOFTHUG - Pearl	SOFTHUG - Diamond	Total
(a) Production of soaps (Units)	4,000	3,000	2,000	9,000
(b) Direct labour (minutes)	30	40	60	-
(c) Direct labour hours (a × b)/60 minutes	2,000	2,000	2,000	6,000

Overhead rate per direct labour hour:

= Budgeted overheads ÷ Budgeted labour hours

= ₹ 1,98,000 ÷ 6,000 hours

= ₹ 33 per direct labour hour

Unit Costs:

	SOFTHUG- Gold (₹)	SOFTHUG- Pearl (₹)	SOFTHUG- Diamond (₹)
Direct Costs:			
- Direct labour	$5.00\left(\frac{10\times30}{60}\right)$	$6.67\left(\frac{10\times40}{60}\right)$	$10.00\left(\frac{10\times60}{60}\right)$
- Direct Material (Refer working note 1)	167.50	215.50	248.50
Production Overhead:	$16.50\left(\frac{33\times30}{60}\right)$	$22.00\left(\frac{33\times40}{60}\right)$	$33.00\left(\frac{33\times60}{60}\right)$
Total unit costs	189.00	244.17	291.50
Number of units	4,000	3,000	2,000
Total costs	**7,56,000**	**7,32,510**	**5,83,000**

Working note -1

Calculation of Direct material cost

	SOFTHUG- Gold (₹)	SOFTHUG- Pearl (₹)	SOFTHUG- Diamond (₹)
Essential oils	$120.00\left(\frac{200\times60}{100}\right)$	$165.00\left(\frac{300\times55}{100}\right)$	$195.00\left(\frac{300\times65}{100}\right)$

Cocoa Butter	40.00 $\left(\frac{200\times20}{100}\right)$	40.00 $\left(\frac{200\times20}{100}\right)$	40.00 $\left(\frac{200\times20}{100}\right)$
Filter water	4.50 $\left(\frac{15\times30}{100}\right)$	4.50 $\left(\frac{15\times30}{100}\right)$	4.50 $\left(\frac{15\times30}{100}\right)$
Chemicals	3.00 $\left(\frac{30\times10}{100}\right)$	6.00 $\left(\frac{50\times12}{100}\right)$	9.00 $\left(\frac{60\times15}{100}\right)$
Total costs	**167.50**	**215.50**	**248.50**

(ii) Activity Based Costing

	SOFTHUG-Gold	SOFTHUG-Pearl	SOFTHUG-Diamond	Total
Quantity (units)	4,000	3,000	2,000	-
Weight per unit (grams)	108 {(60 × 0.8) + 20 + 30 + 10}	106 {(55 × 0.8) + 20 + 30 + 12}	117 {(65 × 0.8) + 20 + 30 + 15}	-
Total weight (grams)	4,32,000	3,18,000	2,34,000	9,84,000
Direct labour (minutes)	30	40	60	-
Direct labour hours	2,000 $\left(\frac{4,000\times30}{60}\right)$	2,000 $\left(\frac{3,000\times40}{60}\right)$	2,000 $\left(\frac{2,000\times60}{60}\right)$	6,000
Machine operations per unit	5	5	6	-
Total operations	20,000	15,000	12,000	47,000

Forklifting rate per gram = ₹ 58,000 ÷ 9,84,000 grams = ₹ 0.06 per gram

Supervising rate per direct labour hour = ₹ 60,000 ÷ 6,000 hours = ₹ 10 per labour hour

Utilities rate per machine operations = ₹ 80,000 ÷ 47,000 machine operations = ₹ 1.70 per machine operations

Unit Costs under ABC:

	SOFTHUG - Gold (₹)	SOFTHUG - Pearl (₹)	SOFTHUG - Diamond (₹)
Direct Costs:			
- Direct Labour	5.00	6.67	10.00
- Direct material	167.50	215.50	248.50
Production Overheads:			
Forklifting cost	6.48 (0.06 × 108)	6.36 (0.06 × 106)	7.02 (0.06 × 117)
Supervising cost	5.00 $\left(\frac{100\times30}{60}\right)$	6.67 $\left(\frac{10\times40}{60}\right)$	10.00 $\left(\frac{10\times60}{60}\right)$
Utilities	8.50 (1.70 × 5)	8.50 (1.70 × 5)	10.20 (1.70 × 6)
Total unit costs	192.48	243.70	285.72
Number of units	4,000	3,000	2,000
Total costs	**7,69,920**	**7,31,100**	**5,71,440**

(iii) Comments: The difference in the total costs under the two systems is due to the differences in the overheads borne by each of the products. The Activity Based Costs appear to be more precise.

Question 27

GST Limited is a multi-product company. The production and cost details of its two products P and Q are given as follows:

Particulars	Product	
	P	Q
Quantity produced (No.)	9,000	7,200
Direct material cost (₹)	72,000	50,000
Direct labour hours	800	600
Purchase requisition (No.)	180	144
Production runs (No.)	144	108
Quality inspections (No.)	27	18

Direct wages rate is ₹ 14.50 per hour. Presently the company uses a single overhead recovery rate based on direct labour hours. Overhead incurred by the company during the year 2023-24 are as follows:

Technical staff salary	₹ 45,000
Machine operation expenses	₹ 1,62,000
Machine maintenance expenses	₹ 27,000
Wages and salary of stores staff	₹ 36,000

During this period direct labour hours worked 72,000.

Now the Company wants to adopt Activity Based Costing. For this purpose, following activities are identified:

- Quality control
- Setup of machine for production runs
- Store receiving

It is also decided that salary of technical staff should be distributed among machine maintenance, setup and quality control in the ratio of 1 : 2 : 2. Machine maintenance expenses and machine operation expenses should be distributed in the ratio of 2 : 3 in between stores and production setup activities.

During this period cost drivers for these activities are identified as under:

- Requisition raised	5,760
- Production setup	7,200
- No. of quality test	720

You are required to compute:

(i) The cost of products P and Q based on traditional absorption costing system.

(ii) The cost of products P and Q based on ABC Costing system. (PYP 8 Marks Sep'24)

Answer 27

(i) Statement Showing "Total Cost - Traditional Method"

Particulars of Costs	P	Q
	(₹)	(₹)
Direct Materials	72,000	50,000
Direct Labour [(800,600 hours) × ₹14.5]	11,600	8,700
Production Overheads [(800,600 hours) × ₹**3.75**](WN1)	3,000	2,250
Total Cost	**86,600**	**60,950**
Cost per unit (9,000, 7,200)	9.62	8.47

WN1: Calculation of Production Overhead:

	(₹)
Technical staff salary	45,000
Machine operation expenses	1,62,000
Machine maintenance expenses	27,000
Wages and salary of stores staff	36,000
Total Production Overhead	2,70,000
Total direct labour hours worked	72,000 hours

Production Overhead rate per hour	3.75

(ii) Statement Showing "Total Cost - Activity Based Costing"

Products	P	Q
Production (units)	9,000	7,200
	(₹)	(₹)
Direct Materials	72,000	50,000
Direct Labour [(800,600 hours) × ₹14.5]	11,600	8,700
Requisition Related Costs @ ₹20 per requisitionraised (180,144) (WN2)	3,600	2,880
Production Setup Costs @ ₹19 per productionruns (144,108) (WN2)	2,736	2,052
Quality Inspection Costs @ ₹25 per quality test(27,18) (WN2)	675	450
Total Costs	**90,611**	**64,082**
Cost per unit (9,000, 7,200)	10.07	8.90

WN2: Statement Showing Distribution of Expenses

	Machine maintenance expenses	Total Stores	Production Setup	Quality Control
Technical staff salary of ₹45,000 (1:2:2)	9,000	-	18,000	18,000
Machine operationexpenses of ₹1,62,000(2:3)	-	64,800	97,200	-
Machine maintenanceexpenses of ₹ 36,000(2:3)	(9,000)	14,400	21,600	-
Wages and salary ofstores staff	-	36,000	-	-
Total	-	**1,15,200**	**1,36,800**	**18,000**

WN3: Cost for each activity cost driver:

Activity (1)	Total cost (₹) (2)	Cost allocationbase (3)	Cost driver rate (4) = [(2) ÷ (3)]
Stores Receiving	1,15,200	5,760 Requisitions Raised	**₹ 20 per requisition raised**
Production Setup	1,36,800	7,200 Production Setup	**₹ 19 per production setup**
Quality Control	18,000	720 Quality Test	**₹ 25 per quality test**

Question 28

Xtyle Ltd. is a leading manufacturer in the textile industry, renowned for its commitment to quality and innovation. With decades of experience, the company specializes in producing a diverse range of textile products, including high-quality towels, designed to meet the varying needs of its customers. The company offers mainly three types of towel, viz. Hand towels, Kitchen towels and Gym towels, catering to both everyday use and specialized applications. Below are the key production data for a recent period:

Particulars	Hand towels	Kitchen towels	Gym towels
Production (units)	9,000	15,000	60,000
Machine hours per unit	10	18	14
Direct Labour hours per unit	4	12	8
Direct Material per unit (₹)	450	400	600

Currently, the company utilizes a traditional costing method, which assigns all production overhead costs based on the number of machine hours used. The overhead cost is calculated at a rate of ₹ 30 per machine hour. Additionally, the direct labor cost is charged at ₹ 100 per hour.

Now, the company plans to implement an Activity-Based Costing (ABC) system to enhance cost accuracy and provide a clearer understanding of the costs associated with each product.

The activity analysis is provided as under:

Particulars	Hand towels	Kitchen towels	Gym towels
Batch size (units)	450	1,500	3,000
Number of purchase orders per batch	3	10	8
Store delivery	45	80	125
Number of inspections per batch	5	4	3

Further, the total production overheads can be divided into several key categories. Machine setup costs account for 20% of the total, while inspection costs make up 35%. Material procurement-related costs represent 10%, and store delivery costs also constitute 10%. Finally, machine operation costs contribute 25% to the overall overheads. This breakdown provides insight into how resources are allocated across various activities within the production process.

You are required to CALCULATE the cost per unit of each product using -

(i) traditional method.

(ii) activity based costing principles. *(MTP 6 Marks Nov'24)*

Answer 28

(i) Statement Showing "Cost per unit - Traditional Method"

Particulars of Costs	Hand towels	Kitchentowels	Gym towels
	(₹)	(₹)	(₹)
Direct Materials	450	400	600
Direct Labour [(4, 12, 8 hours) × ₹100]	400	1,200	800
Production Overheads [(10,18, 14 hours) × ₹30]	300	540	420
Cost per unit	**1,150**	**2,140**	**1,820**

(ii) Statement Showing "Cost per unit - Activity Based Costing"

Products	Hand towels	Kitchen towels	Gym towels
Production (units)	9,000	15,000	60,000
	(₹)	(₹)	(₹)
Direct Materials	40,50,000 (9,000 units x ₹ 450)	60,00,000 (15,000 units x ₹ 400)	3,60,00,000 (60,000 units x ₹ 600)
Direct Labour (refer Part (i) above)	36,00,000 (9,000 units x ₹ 400)	1,80,00,000 (15,000 units x ₹1,200)	4,80,00,000 (60,000 units x ₹ 800)
Setup Costs @ ₹1,44,000 per setup	28,80,000 (20 setups x ₹1,44,000)	14,40,000 (10 setups x ₹1,44,000)	28,80,000 (20 setups x ₹1,44,000)
Inspection Costs @ ₹ 63,000 perinspection	63,00,000 (100 inspections x ₹63,000)	25,20,000 (40 inspections x ₹63,000)	37,80,000 (60 inspections x ₹63,000)
Purchase RelatedCosts @ ₹ 11,250 per purchase order	6,75,000 (60 purchase orders x ₹ 11,250)	11,25,000 (100 purchase orders x ₹11,250)	18,00,000 (160 purchase orders x ₹ 11,250)
Store delivery costs @ ₹ 14,400 per store delivery	6,48,000 (45 store delivery x ₹14,400)	11,52,000 (80 store delivery x ₹14,400)	18,00,000 (125 store delivery x ₹ 14,400)
Machine RelatedCosts @ ₹ 7.5 per hour	6,75,000 (90,000 hours x ₹ 7.5)	20,25,000 (2,70,000 hours x ₹ 7.5)	63,00,000 (8,40,000 hours x ₹ 7.5)
Total Costs	**1,88,28,000**	**3,22,62,000**	**10,05,60,000**
Cost per unit (Total Cost ÷ no. of Units)	**2,092**	**2,151**	**1,676**

Working Notes:

A. Number of Batches, Purchase Orders, Inspections and StoreDeliveries-

	Particulars	Hand towels	Kitchen towels	Gym towels	Total
A.	Production (units)	9,000	15,000	60,000	

B.	Batch Size (units)	450	1,500	3,000	
C.	Number of Batches (A÷B)	20	10	20	50
D.	Number of Purchase Order perbatch	3	10	8	
E.	Total Purchase Orders [C × D]	60	100	160	320
F.	Number of Inspections per batch	5	4	3	
G.	Total Inspections [C × F]	100	40	60	200
H.	Total Store Deliveries	45	80	125	250

B. Total Machine Hours-

	Particulars	Hand towels	Kitchen towels	Gym towels
A.	Machine Hours per unit	10	18	14
B.	Production (units)	9,000	15,000	60,000
C.	Total Machine Hours [A × B]	90,000	2,70,000	8,40,000

Total Machine Hours = 12,00,000Total Production Overheads-

= 12,00,000 hrs. × ₹ 30 = ₹3,60,00,000

C. Cost Driver Rates-

Cost Pool	%	Overheads (₹)	Cost DriverBasis	Cost Driver (Units)	Cost DriverRate (₹)
Setup	20%	72,00,000	Number of batches	50	1,44,000 per Setup
Inspection	35%	1,26,00,000	Number of inspections	200	63,000 per Inspection
Purchases	10%	36,00,000	Number of purchase order	320	11,250 per Purchase order
Store delivery	10%	36,00,000	Number of storedeliveries	250	14,400 perstore delivery
Machine Operation	25%	90,00,000	Machine Hours	12,00,000	7.5 perMachine Hour

Question 29

XYZ Constructions is a leading engineering and construction company providing a range of infrastructure and industrial services. Recently, they have been asked to quote for residential building construction (RBC) and industrial plant construction (IPC) projects. However, they are winning fewer RBC contracts than expected.

XYZ Constructions has a policy to price all jobs at budgeted total cost plus 50%. Overheads are currently absorbed on a labour-hour basis. The company believes that switching to activity-based costing (ABC) to absorb overheads would reduce the costs associated with RBC and make them more competitive.

You are provided with the following data:

Overhead category	Annual Overhead (₹ Lakhs)	Activity driver	Total number of activities per year
Supervisors	₹120	Site visits	600
Project Planners	₹ 80	Planning documents	300
Property related	₹400	Labour hours	50,000
Total	₹600		

For a typical RBC: Material cost: ₹ 5 lakhs, Labour hours: 1,200 hours, Site visits: 2 visits, Planning documents: 2 documents

For a typical IPC: Material cost: ₹ 12 lakhs, Labour hours: 2,500 hours, Site visits: 10 visits, Planning documents: 8 documents

Labour is paid at ₹ 100 per hour.

Required:

(a) CALCULATE the cost and quoted price of an RBC and an IPC using labour hours to absorb the overheads.

(b) CALCULATE the cost and quoted price of an RBC and an IPC using ABC to absorb the overheads.

(c) Assuming that the cost of an RBC falls by nearly 7% and the price of an IPC rises by about 2% as a result of the change to ABC, SUGGEST possible pricing strategies for the two services offered by XYZ Constructions.

Additionally, suggest two reasons other than high prices for the current poor sales of RBC.

(MTP 10 Marks Dec'24)

Answer 29

a) Cost and Quoted Price Using Labour Hours to Absorb Overheads

		RBC (₹ in lakhs)	IPC (₹ in lakhs)
Materials		5.00	12.00
Labour	1200 x ₹ 100; 2500 x ₹ 100	1.20	2.50
Overheads	1200 x ₹ 1200; 2500 x ₹ 1200	14.40	30.00
Total cost		20.60	44.50
Add: Profit	50% of Total Cost	10.30	22.25
Quoted Price		**30.90**	**66.75**

b) Cost and Quoted Price Using ABC

Step 1: Calculate Overhead Rates for Each Activity

Overhead Category	Total Overhead (₹ Lakhs)	Activity Driver	Activity Rate
Site Engineers	₹120	Site Visits	₹ 120 / 600 = ₹ 20,000 per site visit
Project Planners	₹80	Planning Documents	₹ 80 / 300 = ₹ 26,667 per planning document
Equipment Depreciation	₹400	Labour Hours	₹ 400 / 50,000 = ₹ 800 per labour hour

Step 2: Allocate Overheads Using ABC

		RBC (in lakhs)	IPC (in lakhs)
Materials		5.00	12.00
Labour	1200 x ₹100; 2500 x ₹100	1.20	2.50
Overheads			
Site Engineers	2 x ₹ 20,000; 10 x ₹ 20,000	0.40	2.00
Project Planners	2 x ₹ 26,667; 8 x ₹ 26,667	0.53	2.13
Equipment Depreciation	1200 x ₹ 800; 2500 x ₹ 800	9.60	20.00
Total cost		16.73	38.63
Add: Profit	50% of Total Cost	8.37	19.32
Quoted Price		**25.10**	**57.95**

c) Possible pricing strategies for the two services offered by XYZ Constructions

- The pricing policy is a matter for XYZ Constructions to decide. They could elect to maintain the current 50% mark-up on cost and if they did the price of the RBC would fall by around 7% in line with the costs. This should make them more competitive in the market.
- They could also reduce the prices by a little less than 7% (say 5%) in order to increase internal margins a little.
- **Reasons other than high prices for the current poor sales of RBC:**
- If the quality of work or the reputation and reliability of the builder are questionable, lowering prices is unlikely to boost sales.
- While it is possible that XYZ Constructions has a strong reputation for IPC but not for RBC, it is more likely that a poor reputation would impact all their products. Poor service or inflexibility in meeting customer

needs may also hurt sales and can't be fixed by lowering prices.

- Poor marketing strategies also discourage customers from selecting XYZ Constructions.
- XYZ Constructions faces competition and may need to adopt a more competitive pricing strategy, such as 'going rate pricing,' instead of simply adding a markup to costs.
- XYZ Constructions could enter the market by pricing some projects competitively to establish a foothold. Completed projects could then be leveraged to attract new customers.

Multiple Choice Questions (MCQ)

1. **A cost driver is:** ***(SM)***
   (a) An item of production overheads
   (b) A common cost which is shared over cost centres.
   (c) Any cost relating to transport
   (d) An activity which generates costs

Ans: (d)

2. **In activity-based costing, costs are accumulated by activity using:** ***(SM)***
   (a) Cost drivers
   (b) Cost objects
   (c) Cost pools
   (d) Cost benefit analysis

Ans: (c)

3. **A cost driver:** ***(SM)***
   (a) Is a force behind the overhead cost
   (b) Is an allocation base
   (c) Is a transaction that is a significant determinant of cost
   (d) All of the above

Ans: (d)

4. **Which of the following is not a correct match:** ***(SM)***

	Activity	Cost Driver
(a)	Production Scheduling	Number of Production runs
(b)	Dispatching	Number of dispatch orders
(c)	Goods receiving	Goods received orders
(d)	Inspection	Machine hours

Ans: (d)

5. **Transactions undertaken by support department personnel are the appropriate cost drivers. Find the one which is not appropriate:** ***(SM)***
   (a) The number of purchase, supplies and customers' orders drives the cost associated with new material inventory, work-in-progress and finished goods inventory
   (b) Number of productions runs undertaken drives production scheduling, inspection and material handling
   (c) The quality of raw material issued drives the cost of receivingdepartment costs
   (d) The number of packing orders drives the packing costs

Ans: (c)

6. **Steps in ABC include:** ***(SM)***
   (a) Identification of activities and their respective costs
   (b) Identification of cost driver of each activity and computation of an allocation rate per activity
   (c) Allocation of overhead cost to products/ services based on the activities involved
   (d) All of the above

Ans: (d)

7. **Which of the following is not a benefit of ABC?** ***(SM)***
   (a) Accurate cost allocation
   (b) Improved decision making
   (c) Better control on activity and costs
   (d) Reduction of prime cost

Ans: (d)

8. **The steps involved for installation of ABC in a manufacturing company include the following except:** ***(SM)***

(a) Borrowing fund
(b) Feasibility study
(c) Building up necessary IT infrastructure and training of line employees
(d) Strategy and value chain analysis

Ans: (a)

9. **Which of the following statements are true: (1) Activity based Management involves activity analysis and performance measurement. (2) Activity based costing serves as a major source of information in ABM.** ***(SM)***

(a) (1) True; (2) False
(b) (1) True; (2) True
(c) (1) False; (2) True
(d) (1) False; (2) False

Ans: (b)

10. **The key elements of activity-based budgeting are:** ***(SM)***

(a) Type of activity to be performed
(b) Quantity of activity to be performed
(c) Cost of activity to be performed
(d) All of the above

Ans: (d)

11. **From the following information, calculate the Total cost of Product A and B using the ABC analysis:** ***(MTP 2 Marks Apr'24)***

	Product A	Product B
Units	5,000	5,000
Number of purchase orders placed	100	220
Number of deliveries received	70	200
Ordering Cost	₹ 4,00,000	
Delivery Cost	₹ 1,35,000	

(a) A = ₹ 47,500; B = ₹ 1,27,500
(b) A = ₹ 2,67,500; B = ₹ 2,67,500
(c) A = ₹ 1,60,00; B = ₹ 3,75,000
(d) A = ₹ 1,47,500; B = ₹ 1,47,500

Ans: (c)

12. **One of Pintu Company's cost pools is parts administration. The budgeted overhead cost for that cost pool was ₹ 4,00,000 and the expected activity was 4,000 part types. The actual overhead cost for the cost pool was ₹ 4,20,000 at an actual activity of 5,000 part types. The activity rate for that cost pool was:(Chapter 5: Activity Based Costing)** ***(MTP 2 Marks July'24)***

(a) ₹ 80 per part type
(b) ₹ 100 per part type
(c) ₹ 105 per part type
(d) ₹ 84 per part type

Ans: (b)

CHAPTER 6: COST SHEET

CONCEPTS OF THIS CHAPTER	LDR Questions
• Classify and ascertain cost by function. • Prepare cost sheet/statement for production and services.	Q 21 Q 26 Q 28 Q 30

QUICK REVIEW OF IMPORTANT CONCEPTS

Cost Sheet- Specimen Format

	Particulars	Total Cost (R)	Cost per unit (R)
1.	Direct materials consumed:		
	Opening Stock of Raw Material	xxx	
	Add: Purchases	xxx	
	Less: Closing Stock of Raw Material	(xxx)	
		xxx	**xxx**
2.	Direct employee (Labour) cost	xxx	
3.	Direct expenses	xxx	
4.	**Prime Cost (1+2+3)**	**xxx**	**xxx**
5.	**Add:** Words/ Factory Overhead	xxx	
6.	Gross Words Cost (4+5)	xxx	
7.	**Add:** Opening Word in Forget	xxx	
8.	**Less:** Closing Word in Forget	(xxx)	
9.	**Works/ Factory Cost (6+7-8)**	**xxx**	**xxx**
10.	**Add:** Quality Control Cost	xxx	
11.	**Add:** Reteach and Development Cost	xxx	
12.	**Add:** Administrative Overhead (relating to production activity)	xxx	
13.	**Less:** Credit for Recoveree/Scrap/By-Product/ match. income	(xxx)	
14.	**Add:** Facing cost (primary)	xxx	
15.	**Cost of Production (9+10+11+12-13+14)**	**xxx**	**xxx**
16.	**Add:** Opening Stock of Finished Goods	xxx	
17.	**Less:** Closing Stock of Finished Goods	(xxx)	
18.	**Cost of Goods Sold (15+16-17)**	**xxx**	**xxx**
19.	**Add:** Administrative Overhead (General)	xxx	
20.	**Add:** Marketing Overheads :		
	Selling Overhead	xxx	
	Distribution Overhead	xxx	
21.	**Cost of Sales (18+19+20)**	**xxx**	**xxx**

Questions & Answers

Theory Questions

Question 1

EXPLAIN the treatment of following items in cost sheet.

(i) Credit for Recoveries

(ii) Packing Cost (primary)

(iii) Joint Products and By-Products

(iv) Quality Control Cost *(MTP 4 Marks July'24)*

Answer 1

Treatment is as follows:

(i) Credit for Recoveries: The realised or realisable value of scrap or waste is deducted as it reduces the cost of production.

(ii) Packing Cost (primary): Packing material which is essential to holdand preserve the product for its use by the customer is added in the factory cost.

(iii) Joint Products and By-Products: Joint costs are allocated between/among the products on a rational and consistent basis. In case of by-products, the net realisable value of by-products is deducted from the cost of production.

(iv) Quality Control Cost: It is added in the factory cost as this is the costof resources consumed towards quality control procedures.

Practical Questions

Question 2

The following data relates to the manufacturing project received for the budgeted output of 19,600 units. You are required to CALCULATE the selling price per unit covering a profit of 25% on the selling price.

Direct materials: 40 sq. m. per unit @ ₹ 10.60 per sq. m.

Direct wages: Bonding department 48 hours per unit @ ₹ 25 per hour

Finishing department 30 hours per unit @ ₹ 19 per hour

Budgeted costs and hours per annum- Variable overhead:

	(₹)	Total hours
Bonding department	15,00,000	10,00,000
Finishing department	6,00,000	6,00,000

Fixed overhead-

	(₹)
Production	15,68,000
Selling and distribution	7,84,000
Administration (General)	3,92,000

(MTP 10 Marks, Mar'22)

Answer 2

Decision making Cost Sheet (per unit)

Particulars	**(Amount in ₹)**	**(Amount in ₹)**
Direct materials 40 m^2 at ₹ 10.60 per m^2		424
Direct wages:		
Bonding department- 48 hours at ₹ 25 per hour	1,200	
Finishing department- 30 hours at ₹ 19 per hour	570	1,770
Prime Cost		**2,194**
Variable overhead:*		
Bonding department- 48 hours at ₹ 1.50 per hour	72	
Finishing department- 30 hours at ₹ 1.00 per hour	30	102
Variable production cost		**2,296**

Fixed production overhead#		80
Total production cost		**2,376**
Selling and distribution cost$	40	
Administration cost$	20	60
Total Cost		**2,436**

Selling price per unit = Rs. 2,436 X $\frac{100}{75}$ = Rs. 3,248

Working Notes:

* Variable overhead rates –

Bonding : $\frac{15,00,000}{10,00,000\ hours}$ = Rs. 1.50

Finishing : $\frac{6,00,000}{6,00,000\ hours}$ = Rs. 1.00

Fixed production overhead rate per unit of output = $\frac{15,68,000}{19,600\ hours}$ = Rs. 80

$ Selling and production cost per unit of output = $\frac{7,84,000}{19,600\ hours}$ = Rs. 40

Administration cost per unit of output = $\frac{3,92,000}{19,600\ hours}$ = Rs. 20

Question 3

A factory can produce 1,80,000 units per annum at its 60% capacity. The estimated costs of production are as under:

Direct material	**₹300 per unit**
Direct employee cost	**₹160 per unit**
Indirect expenses:	
- Fixed	**₹32,50,000 per annum**
- Variable	**₹50 per unit**
- Semi- variable	**₹20,000 per month up to 50% capacity and ₹2,500 for every 20% increase in the capacity or part thereof.**

If production program of the factory is as indicated below and the management desires to ensure a profit of ₹1,00,00,000 for the year, DETERMINE the average selling price at which each unit should be quoted:

First three months of the year- 50% of capacity;

Remaining nine months of the year- 75% of capacity. ***(MTP 10 Marks Oct'22)***

Answer 3

Statement of Cost

	First three months (Rs.)	Remaining nine months (Rs.)	Total (Rs.)
	37,500 units	**1,68,750 units**	**2,06,250 units**
Direct material	1,12,50,000	5,06,25,000	6,18,75,000
Direct employee cost	60,00,000	2,70,00,000	3,30,00,000
Indirect- variable expenses	18,75,000	84,37,500	1,03,12,500
Indirect – fixed expenses	8,12,500	24,37,500	32,50,000
Indirect- semi-variable expenses			
- For first three months @ Rs.20,000 p.m.	60,000		
- For remaining nine months @ Rs.25,000 p.m.		2,25,000	2,85,000
Total cost	1,99,97,500	8,87,25,000	10,87,22,500
Desired profit	-	-	1,00,00,000
Sales value	-	-	11,87,22,500
Average selling price per unit			575.62

Question 4

From the following data CALCULATE (i) Administration cost, (ii) Selling cost and (iii) Distribution cost:

		Amount (₹)
(i)	**Rent paid for factory building**	**96,000**
(ii)	**Salary paid to office staffs**	**8,20,000**

(iii)	Fees paid to auditors	92,000
(iv)	Salary paid to sales manager	8,00,000
(v)	Vehicle hire charges paid for directors attending general meeting	10,200
(vi)	Wages paid to workers engaged in storing goods at sales depot	7,200
(vii)	Travelling allowance paid to sales staffs	9,600
(viii)	Cost paid for secondary packing	8,200
(ix)	Electricity bill paid for sales office	1,800
(x)	Depreciation on goods delivery vehicles	13,000
(xi)	Bonus paid to sales staffs for achieving targets	96,000
(xii)	Fees paid to independent directors	1,02,000

(MTP 6 Marks Dec'24)

Answer 4

(i) Calculation of Administration cost:

Particulars	Amount (₹)
Salary paid to office staffs	8,20,000
Fees paid to auditors	92,000
Vehicle hire charges paid for directors attending general meeting	10,200
Fees paid to independent directors	1,02,000
	10,24,200

(ii) Calculation of Selling cost:

Particulars	Amount (₹)
Salary paid to sales manager	8,00,000
Wages paid to workers engaged in storing goods at sales depot	7,200
Travelling allowance paid to sales staffs	9,600
Electricity bill paid for sales office	1,800
Bonus paid to sales staffs for achieving targets	96,000
	9,14,600

(iii) Calculation of Distribution cost:

Particulars	Amount (₹)
Cost paid for secondary packing	8,200
Depreciation on goods delivery vehicles	13,000
	21,200

Question 5

From the following data of Appu Ltd., CALCULATE (i) Material Consumed; (ii) Prime Cost and (iii) Cost of production. *(RTP Sep'24)*

		Amount (₹)
(i)	Repair & maintenance paid for plant & machinery	9,80,500
(ii)	Insurance premium paid for inventories	26,000
(iii)	Insurance premium paid for plant & machinery	96,000
(iv)	Raw materials purchased	64,00,000
(v)	Opening stock of raw materials	2,88,000
(vi)	Closing stock of raw materials	4,46,000
(vii)	Wages paid	23,20,000
(viii)	Value of opening Work-in-process	4,06,000
(ix)	Value of closing Work-in-process	6,02,100
(x)	Quality control cost for the products in manufacturing process	86,000

(xi)	Research & development cost for improvement in production process	92,600
(xii)	Administrative cost for:	
	- Factory & production	9,00,000
	- Others	11,60,000
(xiii)	Amount realized by selling scrap generated during the manufacturing process	9,200
(xiv)	Packing cost necessary to preserve the goods for further processing	10,200
(xv)	Salary paid to Director (Technical)	8,90,000

Answer 5

Calculation of Cost of Production of Appu Ltd.

Particulars	Amount (₹)
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000
Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000
Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realised by selling scrap	(9,200)
Add: Primary packing cost	10,200
Cost of Production	1,05,48,000

Notes:

(i) Other administrative overhead does not form part of cost of production.

(ii) Salary paid to Director (Technical) is an administrative cost.

Question 6

The following information pertains to A Limited for the year 1st April 2021 to 31st March 2022:

Particulars	Amount (₹)
Sales	50,00,000
Direct labour	10,50,000
Administrative overheads (relating to production activity)	1,50,000
Selling expenses	2,50,000

Inventory details are as follows:

	As on 1st April 2021 (Amount in ₹)	As on 31st March 2022 (Amount in ₹)
Raw materials	5,00,000	6,30,000
Finished goods	9,80,000	10,50,000
Work in Progress	6,00,000	8,00,000

Additional Information:

- Direct labour would be 175% of works overheads.
- Cost of goods sold would be ₹ 6,900 per unit
- Selling expenses would be ₹ 500 per unit.

You are required to PREPARE a cost sheet for the year ended 31st March, 2022 showing:

(i) **Value of material purchased**
(ii) **Prime cost**
(iii) **Works cost**
(iv) **Cost of production**
(v) **Cost of goods sold**
(vi) **Cost of Sales**
(vii) **Profit earned**
(viii) **Profit as a percentage of sales** ***(MTP 10 Marks Sep'22)***

Answer 6

Cost Sheet of A Limited for the year ended 31st March 2022

Particulars	Amount (₹)	Amount (₹)
Opening Stock of Raw materials	5,00,000	
Add: **Purchases** (balancing figure)	**20,50,000**	
Less: Closing stock of raw materials	6,30,000	
Direct material consumed (balancing figure)		19,20,000
Direct labour		10,50,000
Prime Cost		**29,70,000**
Add: Factory Overheads (10,50,000 / 175%)		**6,00,000**
Add: Opening Stock of Work in Progress		6,00,000
		41,70,000
Less: Closing Stock of Work in Progress		8,00,000
Works Cost		**33,70,000**
Add: Administrative Overheads (relating to production activity)		1,50,000
COST OF PRODUCTION		**35,20,000**
Add: Opening stock of finished goods		9,80,000
Cost of Goods available for sale		45,00,000
Less: Closing Stock of finished goods		10,50,000
COST OF GOODS SOLD (Working Note: (iv))		**34,50,000**
Add: Selling and Distribution Overhead		2,50,000
COST OF SALES		**37,00,000**
Add: Profit (Balancing figure) [Sales - Cost of Sales]		13,00,000
SALES		**50,00,000**

Profit as a % of sales = $\frac{13\ Lakhs}{50 Lakhs} \times 100 = 26\%$

Working Notes:

(i) The cost sheet is completed by Reverse Working. Purchases amount is the balancing figure.

(ii) Direct labour = 175% of factory overhead (given). Hence, if direct labour = 10,50,000, then Factory Overhead = 10,50,000 / 175% = ₹ **6,00,000**

(iii) Selling Overhead ₹ 2,50,000 (total), selling per unit ₹ 500.
Number of units sold = ₹ 2,50,000/ ₹ 500 = 500 units

(iv) Cost of goods sold = 500 units x ₹ 6,900 = ₹ 34,50,000

Question 7

A Ltd. produces a single product X. During the month of December 2021, the company has produced 14,560 tonnes of X. The details for the month of December 2021 are as follows:

(i) Materials consumed ₹ 15,00,000
(ii) Power consumed 13,000 Kwh @ ₹ 7 per Kwh
(iii) Diesels consumed 1,000 litres @ ₹ 93 per litre
(iv) Wages & salary paid – ₹ 64,00,000
(v) Gratuity & leave encashment paid – ₹ 44,20,000
(vi) Hiring charges paid for HEMM- ₹ 13,00,000

(vii) Hiring charges paid for cars used for official purpose – ₹ 80,000
(viii) Reimbursement of diesel cost for the cars – ₹ 20,000
(ix) The hiring of cars attracts GST under RCM @5% without credit.
(x) Maintenance cost paid for weighing bridge (used for weighing of final goods at the time of despatch) – ₹ 7,000
(xi) AMC cost of CCTV installed at weighing bridge (used for weighing of final goods at the time of despatch) and factory premises is ₹ 6,000 and ₹ 18,000 per month respectively.
(xii) TA/ DA and hotel bill paid for sales manager- ₹ 16,000
(xiii) The company has 180 employees works for 26 days in a month.

Required:

(a) PREPARE a Cost sheet for the month of December 2021.
(b) COMPUTE Earnings per manshift (EMS) and Output per manshift (OMS) for the month of December 2021. *(RTP May'22)*

Answer 7

Cost Sheet of A Ltd. for the month of December 2021

Particulars	Amount (₹)	Amount (₹)
Materials consumed		15,00,000
Wages & Salary	64,00,000	
Gratuity & leave encashment	44,20,000	1,08,20,000
Power cost (13,000 kwh × ₹ 7)	91,000	
Diesel cost (1,000 ltr × ₹ 93)	93,000	1,84,000
HEMM hiring charges		13,00,000
Prime Cost		**1,38,04,000**
AMC cost of CCTV installed at factory premises		18,000
Cost of Production/ Cost of Goods Sold		**1,38,22,000**
Hiring charges of cars	80,000	
Reimbursement of diesel cost	20,000	
	1,00,000	
Add: GST @5% on RCM basis	5,000	1,05,000
Maintenance cost for weighing bridge	7,000	
AMC cost of CCTV installed at weigh bridge	6,000	13,000
TA/ DA & hotel bill of sales manager		16,000
Cost of Sales		**1,39,56,000**

(a) **Man shift =** 180 employees × 26 days = 4,680 man shifts

Computation of earnings per man shift (EMS):

$$EMS = \frac{Total\ employee\ benefits\ paid}{Manshift}$$

$$= \frac{Rs.1,08,20,000}{4,680} = Rs.\ 2,312$$

Computation of Output per man shift (OMS):

$$OMS = \frac{Total\ Output\ /\ Production}{Manshift}$$

$$= \frac{14,560\ Tonne}{4,680} = 3.11\ tonne$$

Question 8

CT Limited is engaged in producing medical equipment. It has furnished following details related to its products produced during a month:

	Units	Amount (₹)
Raw materials		
Opening stock	**1,000**	**90,00,000**
Purchases	**49,000**	**44,10,00,000**
Closing stock	**1,750**	**1,57,50,000**
Works-in-progress		

Opening	2,000	1,75,50,000
Closing	1,000	94,50,000
Direct employees' wages, allowances etc.		6,88,50,000
Primary packaging cost (per unit)		1,440
R&D expenses & Quality control expenses		2,10,60,000
Consumable stores, depreciation on plant		3,42,00,000
Administrative overheads related to production		3,15,00,000
Selling expenses		4,84,30,800
Royalty paid for production		3,64,50,000
Cost of web-site (for online sale) maintenance		60,75,000
Secondary packaging cost (per unit)		225

There was a normal scrap of 250 units of direct material which realized ₹ 5,400 per unit. The entire finished product was sold at a profit margin of 20% on sales. You are required to PREPARE a cost sheet showing:

(i) Prime cost
(ii) Gross works cost
(iii) Factory costs
(iv) Cost of production
(v) Profit
(vi) Sales. *(RTP Nov'22)*

Answer 8

Cost Sheet

Particulars	Units	Amount (₹)
Material		
Opening stock	1,000	90,00,000
Add: Purchases	49,000	44,10,00,000
Less: Closing stock	(1,750)	(1,57,50,000)
	48,250	**43,42,50,000**
Less: Normal wastage of materials realized @ ₹ 5,400 per unit	(250)	**(13,50,000)**
Material consumed		43,29,00,000
Direct employee's wages and allowances		6,88,50,000
Direct expenses- Royalty paid for production		3,64,50,000
Prime cost	48,000	**53,82,00,000**
Factory overheads - Consumable stores, depreciation etc.		3,42,00,000
Gross Works Cost	48,000	**57,24,00,000**
Add: Opening WIP	2,000	1,75,50,000
Less: Closing WIP	(1,000)	(94,50,000)
Factory/Works Cost	49,000	**58,05,00,000**
Administration Overheads related to production		3,15,00,000
R&D expenses and Quality control cost		2,10,60,000
Add: Primary packaging cost @ ₹ 1,440 per unit		**7,05,60,000**
Cost of production	49,000	**70,36,20,000**
Selling expenses		4,84,30,800
Cost of maintaining website for online sale		60,75,000
Secondary packaging cost @ ₹ 225 per unit	49,000	**1,10,25,000**
Cost of sales		76,91,50,800
Add: Profit @ 20% on sales or 25% of cost		**19,22,87,700**
Sales value		**96,14,38,500**

Question 9

From the following data of Motilal Ltd., CALCULATE Cost of production: *(RTP May'23)*

		(₹)
(i)	Repair & maintenance paid for plant & machinery	9,80,500
(ii)	Insurance premium paid for inventories	26,000

(iii)	Insurance premium paid for plant & machinery	96,000
(iv)	Raw materials purchased	64,00,000
(v)	Opening stock of raw materials	2,88,000
(vi)	Closing stock of raw materials	4,46,000
(vii)	Wages paid	23,20,000
(viii)	Value of opening Work-in-process	4,06,000
(ix)	Value of closing Work-in-process	6,02,100
(x)	Quality control cost for the products in manufacturing process	86,000
(xi)	Research & development cost for improvement in production process	92,600
(xii)	Administrative cost for:	
	- Factory & production	9,00,000
	- Others	11,60,000
(xiii)	Amount realised by selling scrap generated during the manufacturing process	9,200
(xiv)	Packing cost necessary to preserve the goods for further processing	10,200
(xv)	Salary paid to Director (Technical)	8,90,000

Answer 9

Calculation of Cost of Production of Motilal Ltd for the period.....

Particulars	**(₹)**
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000
Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000
Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realized by selling scrap	(9,200)
Add: Primary packing cost	10,200
Cost of Production	1,05,48,000

Notes:

(i) Other administrative overhead does not form part of cost of production.

(ii) Salary paid to Director (Technical) is an administrative cost.

Question 10

A Ltd. produces a single product X. During the month of July 2023, the company has produced 14,560 tonnes of X. The details for the month of July 2023 are as follows:

(i) **Materials consumed ₹ 15,00,000**

(ii) **Power consumed in operating production machinery 13,000 Kwh @ ₹ 7 per Kwh**

(iii) **Diesels consumed in operating production machinery 1,000 litres @ ₹ 93 per litre**

(iv) **Wages & salary paid – ₹ 64,00,000**

(v) **Gratuity & leave encashment paid – ₹ 44,20,000**

(vi) **Hiring charges paid for Heavy Earth Moving machines (HEMM) engaged in production – ₹ 13,00,000. Hiring charges is paid on the basis of production.**

(vii) Hiring charges paid for cars used for official purpose – ₹ 80,000
(viii) Reimbursement of diesel cost for the cars – ₹ 20,000
(ix) The hiring of cars attracts GST under RCM @5% without credit.
(x) Maintenance cost paid for weighing bridge (used for weighing of final goods at the time of despatch) – ₹ 7,000
(xi) AMC cost of CCTV installed at weighing bridge (used for weighing of final goods at the time of despatch) and factory premises is ₹ 6,000 and ₹ 18,000 per month respectively.
(xii) TA/ DA and hotel bill paid for sales manager- ₹ 16,000
(xiii) The company has 180 employees works for 26 days in a month.

Required:

PREPARE a Cost sheet for the month of July 2023. *(RTP Nov'23)*

Answer 10

Cost Sheet of A Ltd. for the month of July 2023

Particulars	Amount (₹)	Amount (₹)
Materials consumed		15,00,000
Wages & Salary	64,00,000	
Gratuity & leave encashment	44,20,000	1,08,20,000
Power cost (13,000 kwh × ₹ 7)	91,000	
Diesel cost (1,000 ltr × ₹ 93)	93,000	1,84,000
HEMM hiring charges		13,00,000
Prime Cost		**1,38,04,000**
AMC cost of CCTV installed at factory premises		18,000
Cost of Production/ Cost of Goods Sold		**1,38,22,000**
Hiring charges of cars	80,000	
Reimbursement of diesel cost	20,000	
	1,00,000	
Add: GST @5% on RCM basis	5,000	1,05,000
Maintenance cost for weighing bridge	7,000	
AMC cost of CCTV installed at weigh bridge	6,000	13,000
TA/ DA & hotel bill of sales manager		16,000
Cost of Sales		**1,39,56,000**

Question 11

The following data are available from the books and records of A Ltd. for the month of April 2022:

Particulars	Amount (₹)
Stock of raw materials on 1st April 2022	10,000
Raw materials purchased	2,80,000
Manufacturing wages	70,000
Depreciation on plant	15,000
Expenses paid for quality control check activities	4,000
Lease Rent of Production Assets	10,000
Administrative Overheads (Production)	15,000
Expenses paid for pollution control and engineering & maintenance	1,000
Stock of raw materials on 30th April 2022	40,000
Primary packing cost	8,000
Research & development cost (Process related)	5,000
Packing cost for redistribution of finished goods	1,500
Advertisement expenses	1,300

Stock of finished goods as on 1st April 2022 was 200 units having a total cost of ₹ 28,000. The entire opening stock of finished goods has been sold during the month.

Production during the month of April, 2022 was 3,000 units. Closing stock of finished goods as on 30th April, 2022 was 400 units.

You are required to:

I. Prepare a Cost Sheet for the above period showing the:

(i) **Cost of Raw Material consumed**
(ii) **Prime Cost**
(iii) **Factory Cost**
(iv) **Cost of Production**
(v) **Cost of goods sold**
(vi) **Cost of Sales**

II. **Calculate selling price per unit, if sale is made at a profit of 20% on sales.** ***(PYP 10 Marks May'22)***

Answer 11

1. Statement of Cost (for the month of April, 2022)

S. No.	Particulars	Amount (₹)	Amount (₹)
	Opening stock of Raw material	10,000	
	Add: Purchase of Raw material	2,80,000	
	Less: Closing stock of raw materials	(40,000)	
(i)	**Raw material consumed**		**2,50,000**
	Manufacturing wages		70,000
(ii)	**Prime Cost**		**3,20,000**
	Factory/work overheads:		
	Depreciation on plant	15,000	
	Lease rent of production Asset	10,000	
	Expenses paid for pollution control and engineering & Maintenance	1,000	26,000
(iii)	**Factory/Work Cost**		**3,46,000**
	Expenses paid for quality control check activity		4,000
	Research and Development Cost		5,000
	Administration Overheads (Production)		15,000
	Primary Packing Cost		8,000
(iv)	**Cost of Production**		**3,78,000**
	Add: Opening stock of finished goods		28,000
	Less: Closing stock of finished goods		**(50,400)**
(v)	**Cost of Goods Sold**		**3,55,600**
	Advertisement expenses		1,300
	Packing cost for re-distribution of finished goods sold		1,500
(vi)	**Cost of Sales**		**3,58,400**

Note: Valuation of Closing stock of finished goods

$$= \frac{₹3,78,000}{3000\ units} \times 400 \text{ units}$$

$$= ₹\ 50,400$$

2. Cost per unit sold $= \frac{₹3,58,400}{200+3,000-400} = ₹\ 128$ per unit

∴Selling Price $= \frac{128}{80\%} =$ **₹ 160 per unit**

EXAM INSIGHTS: In this numerical problem based on preparation of Cost Sheet; Cost of raw material consumed, Prime cost, Factory cost, Cost of production, Cost of goods sold, Cost of sales and Selling price per unit were required to be calculated after making adjustments for given relevant items. Some of the examinees made mistake in the treatment of packing cost. Overall performance of the examinees was above average.

Question 12

From the following data of Meta Ltd., CALCULATE Cost of production: ***(MTP 5 Marks July'24)***

		Amount (₹)
(i)	Repair & maintenance paid for plant & machinery	9,80,500
(ii)	Insurance premium paid for inventories	26,000
(iii)	Insurance premium paid for plant & machinery	96,000
(iv)	Raw materials purchased	64,00,000

(v)	Opening stock of raw materials	2,88,000
(vi)	Closing stock of raw materials	4,46,000
(vii)	Wages paid	23,20,000
(viii)	Value of opening Work-in-process	4,06,000
(ix)	Value of closing Work-in-process	6,02,100
(x)	Quality control cost for the products in manufacturing process	86,000
(xi)	Research & development cost for improvement in production process	92,600
(xii)	Administrative cost for:	
	- Factory & production	9,00,000
	- Others	11,60,000
(xiii)	Amount realised by selling scrap generated during the manufacturing process	9,200
(xiv)	Packing cost necessary to preserve the goods for further processing	10,200
(xv)	Salary paid to Director (Technical)	8,90,000
(xvi)	Expenses paid for pollution control and engineering & maintenance	22,000

Answer 12

(a) Calculation of Cost of Production of Meta Ltd for the period.....

Particulars	Amount (₹)
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000
Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000
Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realised by selling scrap	(9,200)
Add: Primary packing cost	10,200
Add: Expenses paid for pollution control and engineering & maintenance	22,000
Cost of Production	1,05,70,000

Notes:

(i) Other administrative overhead does not form part of cost of production.

(ii) Salary paid to Director (Technical) is an administrative cost

Question 13

Following figures has been extracted from the books of M/s A&R Brothers:

	Amount (Rs.)
Stock on 1st March, 2020	
- Raw materials	6,06,000
- Finished goods	3,59,000
Stock on 31st March, 2020	
- Raw materials	7,50,000
- Finished goods	3,09,000

Work-in-process:	
- On 1st March, 2020	12,56,000
- On 31st March, 2020	14,22,000
Purchase of raw materials	28,57,000
Sale of finished goods	1,34,00,000
Direct wages	37,50,000
Factory expenses	21,25,000
Office and administration expenses	10,34,000
Selling and distribution expenses	7,50,000
Sale of scrap	26,000

You are required to COMPUTE:

(i) Value of material consumed

(ii) Prime cost

(iii) Cost of production

(iv) Cost of goods sold

(v) Cost of sales

(vi) Profit/ loss *(MTP 10 Marks May'20 & Oct'23)*

Answer 13

Cost Sheet of M/s A&R Brothers for the month ended March 2020:

	Particulars	Amount (Rs.)	Amount (Rs.)
(i)	**Materials consumed:**		
	- Opening stock	6,06,000	
	- Add: Purchases	28,57,000	
		34,63,000	
	- Less: Closing stock	(7,50,000)	**27,13,000**
	Direct wages		37,50,000
(ii)	**Prime cost**		**64,63,000**
	Factory expenses		21,25,000
			85,88,000
	Add: Opening W-I-P		12,56,000
	Less: Closing W-I-P		(14,22,000)
	Factory cost		84,22,000
	Less: Sale of scrap		(26,000)
(iii)	**Cost of Production**		**83,96,000**
	Add: Opening stock of finished goods		3,59,000
	Less: Closing stock of finished goods		(3,09,000)
(iv)	**Cost of Goods Sold**		**84,46,000**
	Office and administration expenses		10,34,000
	Selling and distribution expenses		7,50,000
(v)	**Cost of Sales**		**1,02,30,000**
(vi)	**Profit** (balancing figure)		**31,70,000**
	Sales		1,34,00,000

Question 14

Xim Ltd. manufactures two types of boxes 'Super' and 'Normal'. The cost data for the year ended 31st March, 2021 is as follows:

	(₹)
Direct Materials	12,00,000
Direct Wages	6,72,000
Production Overhead	2,88,000
Total	21,60,000

There was no work-in-progress at the beginning or at the end of year. It is further ascertained that:

1. Direct materials cost per unit in 'Super' was twice as much of direct material in 'Normal'.
2. 2% cash discount was received for payment made within 30 days to the creditors of Direct materials.
3. Direct wages per unit for 'Normal' were 60% of those of 'Super'.
4. Production overhead per unit was at same rate for both the types of boxes.
5. Administration overhead was 200% of direct labour for each type.
6. Selling cost was ₹ 1 per 'Super' type.
7. Production and sales during the year were as follows:

Production		Sales	
Type	No. of units	Type	No. of units
Super	60,000	Super	54,000
Normal	1,80,000		

8. Selling price was ₹ 30 per unit for 'Super'.
9. Company was also involved in a copyright infringement case related to the manufacturing process of 'Super' production. As per the verdict, it had to pay penalty of ₹ 50,000.

PREPARE Cost Sheet of Xim Ltd. for 'Super' showing:

(i) Cost per unit and Total Cost

(ii) Profit per unit and Total Profit *(MTP 10 Marks Oct'21, PYP 10 Marks Nov'20)*

Answer 14

Cost Sheet of 'Super'

Particulars	**Per unit (₹)**	**Total (₹)**
Direct materials (Working note- (i))	8.00	4,80,000
Direct wages (Working note- (ii))	4.00	2,40,000
Prime cost	12.00	7,20,000
Production overhead (Working note- (iii))	1.20	72,000
Factory Cost	13.20	7,92,000
Administration Overhead (200% of direct wages)	8.00	4,80,000
Cost of production	21.20	12,72,000
Less: Closing stock (60,000 units – 54,000 units)	-	1,27,200
Cost of goods sold i.e. 54,000 units	21.20	11,44,800
Selling cost	1.00	54,000
Cost of sales/ Total cost	22.20	11,98,800
Profit	7.80	4,21,200
Sales value (₹ 30 × 54,000 units)	30.00	16,20,000

Working Notes:

(i) Direct material cost per unit of 'Normal' = M

Direct material cost per unit of 'Super' = 2M

Total Direct Material cost = 2M × 60,000 units + M × 1,80,000 units

Or, Rs. 12,00,000 = 1,20,000 M + 1,80,000 M

Or, M $= \frac{Rs.12,00,000}{3,00,000} =$ Rs. 4

Therefore, Direct material Cost per unit of 'Super' = 2 × ₹ 4 = ₹ 8

(ii) Direct wages per unit for 'Super' = W

Direct wages per unit for 'Normal' = 0.6W

So, (W x 60,000) + (0.6W x 1,80,000) = ₹ 6,72,000

W = ₹ 4 per unit

(iii) Production overhead per unit $= \frac{₹\ 2,88,000}{(60,000 + 1,80,000)} =$ Rs. 1.20

Production overhead for 'Super' = ₹ 1.20 × 60,000 units = ₹ 72,000

Notes:

1. Administration overhead is specific to the product as it is directly related to direct labour as mentioned in the Question and hence to be considered in cost of production only.
2. Cash discount is treated as interest and finance charges; hence, it is ignored.
3. Penalty paid against the copyright infringement case is an abnormal cost; hence, not included

Question 15

The following data relates to manufacturing of a standard product during the month of February, 2022:

Particulars	Amount (in ₹)
Stock of Raw material as on 01-02-2022	1,20,000
Work in Progress as on 01-02-2022	75,000
Purchase of Raw material	3,00,000
Carriage Inwards	30,000
Direct Wages	1,80,000
Cost of special drawing	45,000
Hire charges paid for Plant (Direct)	36,000
Return of Raw Material	60,000
Carriage on return	9,000
Expenses for participation in Industrial exhibition	12,000
Maintenance of office building	3,000
Salary to office staff	37,500
Legal charges	3,750
Depreciation on Delivery van	9,000
Warehousing charges	2,250
Stock of Raw material as on 28-02-2022	45,000
Stock of Work in Progress as on 28-02-2022	36,000

- Store overheads on materials are 10% of material consumed.
- Factory overheads are 20% of the Prime cost.
- 10% of the output was rejected and a sum of ₹ 7,500 was realized on sale of scrap.
- 10% of the finished product was found to be defective and the defective products were rectified at an additional expenditure which is equivalent to 20% of proportionate direct wages.
- The total output was 8,000 units during the month.

You are required to PREPARE a Cost Sheet for the above period showing the:

(i) Cost of Raw Material consumed.
(ii) Prime Cost
(iii) Work Cost
(iv) Cost of Production
(v) Cost of Sales *(MTP 10 Marks Mar'22, PYP 10 Marks Jul'21)*

Answer 15

Statement of Cost for the month of February, 2022

Particulars	Amount (₹)	Amount (₹)
(i) Cost of Material Consumed:		
Raw materials purchased (₹ 3,00,000 – ₹ 60,000)	2,40,000	
Carriage inwards	30,000	
Add: Opening stock of raw materials	1,20,000	
Less: Closing stock of raw materials	(45,000)	3,45,000
Direct Wages		1,80,000
Direct expenses:		
Cost of special drawing	45,000	
Hire charges paid for Plant (Direct)	36,000	81,000
(ii) Prime Cost		**6,06,000**
Carriage on return	9,000	
Store overheads (10% of material consumed)	34,500	
Factory overheads (20% of Prime cost)	1,21,200	
Additional expenditure for rectification of defective products (refer working note)	3,240	1,67,940

Gross factory cost		7,73,940
Add: Opening value of W-I-P		75,000
Less: Closing value of W-I-P		(36,000)
(iii) Works/ Factory Cost		**8,12,940**
Less: Realisable value on sale of scrap		(7,500)
(iv) Cost of Production		**8,05,440**
Add: Opening stock of finished goods		-
Less: Closing stock of finished goods		-
Cost of Goods Sold		**8,05,440**
Administrative overheads:		
Maintenance of office building	3,000	
Salary paid to Office staff	37,500	
Legal Charges	3,750	44,250
Selling overheads:		
Expenses for participation in Industrial exhibition	12,000	12,000
Distribution overheads:		
Depreciation on delivery van	9,000	
Warehousing charges	2,250	11,250
(v) Cost of Sales		**8,72,940**

Working Notes:

1. **Number of Rectified units**

Total Output	8,000 units
Less: Rejected 10%	800 units
Finished product	7,200 units
Rectified units (10% of finished product)	**720 units**

2. **Proportionate additional expenditure on 720 units**

= 20% of proportionate direct wages
= 0.20 x (₹ 1,80,000/8,000) x 720
= ₹ 3,240

EXAM INSIGHTS: This practical problem required preparation of cost sheet. Various items were given for adjustment. Most of the examinees were confused about the treatment of some items like cost of special drawing, hire charges paid for plant, carriage on return and general overheads. Overall performance of the examinees was poor.

Question 16

Following information obtained from the records of a Manufacturing Company for the month of March:
Direct labour cost ₹ 25,000 being 150% of works overheads.
Cost of goods sold excluding administrative expenses ₹ 75,000.
Inventory accounts showed the following opening and closing balances:

	March 1 (₹)	March 31 (₹)
Raw materials	11,600	15,370
Work-in-progress	15,225	21,025
Finished goods	25,520	27,550

Other information is as follows:	
	(₹)
Selling expenses	6,125
General and administration expenses	4,375
Sales for the month	1,05,250

Required to:
(i) FIND out the value of materials purchased.

(ii) PREPARE a cost statement showing the various elements of cost and also the profit earned. (MTP 10 *Marks Mar'23, SM)*

Answer 16

(i) Computation of the value of materials purchased

To find out the value of materials purchased, reverse calculations from the given data can be presented as below:

Particulars	(₹)
Cost of goods sold	**75,000**
Add: Closing stock of finished goods	27,550
Less: Opening stock of finished goods	(25,520)
Cost of production	**77,030**
Add: Closing stock of work-in-progress	21,025
Less: Opening stock of work-in-progress	(15,225)
Works cost	**82,830**
Less: Factory overheads: [₹25,000×100/150]	(16,667)
Prime cost	**66,163**
Less: Direct labour	(25,000)
Raw material consumed	**41,163**
Add: Closing stock of raw materials	15,370
Raw materials available	56,533
Less: Opening stock of raw materials	(11,600)
Value of materials purchased	**44,933**

(ii) Cost statement

	(₹)
Raw material consumed [Refer to statement (i) above]	41,163
Add: Direct labour cost	25,000
Prime cost	**66,163**
Add: Factory overheads	16,667
Works cost	**82,830**
Add: Opening work-in-progress	15,225
Less: Closing work-in-progress	(21,025)
Cost of production	**77,030**
Add: Opening stock of finished goods	25,520
Less: Closing stock of finished goods	(27,550)
Cost of goods sold	**75,000**
Add: General and administration expenses	4,375
Add: Selling expenses	6,125
Cost of sales	**85,500**
Profit (sales i.e ₹1,05,250 – Cost of sales i.e ₹ 85,500)	19,750
Sales	**1,05,250**

Question 17

G Ltd. manufactures leather bags for office and school purposes. The following information is related with the production of leather bags for the month of September, 2021.

(1) Leather sheets and cotton clothes are the main inputs and the estimated requirement per bag is two metres of leather sheets and one metre of cotton cloth. 2,000 metre of leather sheets and 1,000 metre of cotton cloths are purchased at ₹ 3,20,000 and ₹ 15,000 respectively. Freight paid on purchases is ₹ 8,500.

(2) Stitching and finishing need 2,000 man hours at ₹ 80 per hour.

(3) Other direct costs of ₹ 10 per labour hour is incurred.

(4) G Ltd. have 4 machines at a total cost of ₹ 22,00,000. Machines have a life of 10 years with a scrap value of 10% of the original cost. Depreciation is charged on a straight-line method.

(5) The monthly cost of administration and sales office staffs are ₹ 45,000 and ₹ 72,000 respectively. G

Ltd. pays ₹ 1,20,000 per month as rent for a 2,400 sq. feet factory premises. The administrative and sales office occupies 240 sq. feet and 200 sq. feet respectively of factory space.

(6) Freight paid on delivery of finished bags is ₹ 18,000.

(7) During the month, 35 kgs of scrap (cuttings of leather and cotton) are sold at ₹ 150 per kg.

(8) There are no opening and closing stocks of input materials. There is a finished stock of 100 bags in stock at the end of the month.

You are required to prepare a cost sheet in respect of above for the month of September 2021 showing:

(i) Cost of Raw Material Consumed

(ii) Prime Cost

(iii) Works/Factory Cost

(iv) Cost of Production

(v) Cost of Goods Sold

(vi) Cost of Sales *(PYP 10 Marks Dec'21, RTP Nov'19)*

Answer 17

No. of bags manufactured = 1,000 units

Cost sheet for the month of September 2021

	Particulars	Total Cost (₹)	Cost per unit (₹)
1.	Direct materials consumed:		
	- Leather sheets	3,20,000	320.00
	- Cotton cloths	15,000	15.00
	Add: Freight paid on purchase	8,500	8.50
	(i) Cost of material consumed	3,43,500	343.50
2.	Direct wages (₹80 × 2,000 hours)	1,60,000	160.00
3.	Direct expenses (₹10 × 2,000 hours)	20,000	20.00
4.	**(ii) Prime Cost**	5,23,500	523.50
5.	Factory Overheads: Depreciation on machines {(₹ 22,00,000 × 90%) ÷ 120 months}	16,500	16.50
	Apportioned cost of factory rent	98,000	98.00
6.	**(iii) Works/ Factory Cost**	6,38,000	638.00
7.	Less: Realisable value of cuttings (₹150×35 kg.)	(5,250)	(5.25)
8.	**(iv) Cost of Production**	6,32,750	632.75
9.	Add: Opening stock of bags	0	
10.	Less: Closing stock of bags (100 bags × ₹632.75)	(63,275)	
11.	**(v) Cost of Goods Sold**	5,69,475	632.75
12.	Add: Administrative Overheads:		
	- Staff salary	45,000	50.00
	- Apportioned rent for administrative office	12,000	13.33
13.	Add: Selling and Distribution Overheads		
	- Staff salary	72,000	80.00
	- Apportioned rent for sales office	10,000	11.11
	- Freight paid on delivery of bags	18,000	20.00
14.	**(vi) Cost of Sales**	7,26,475	807.19

Apportionment of Factory rent:

To factory building {(₹ 1,20,000 ÷ 2400 sq. feet) × 1,960 sq. feet} = ₹ 98,000

To administrative office {(₹ 1,20,000 ÷ 2400 sq. feet) × 240 sq. feet} = ₹ 12,000

To sale office {(₹ 1,20,000 ÷ 2400 sq. feet) × 200 sq. feet} = ₹ 10,000

EXAM INSIGHTS: This Numerical problem on preparation of Cost Sheet; Cost of raw material consumed, Prime Cost, Works cost, Production Cost, Cost of Goods Sold and Cost of sales were required to be calculated after making adjustments for given relevant items. Most of the examinees were not well versed about the treatment of some items like sale of scrap, office rent and valuation of closing stock. Overall performance of the examinees was poor.

Question 18

Wiwitsu Ltd. manufactures two types of masks- 'Disposable Masks' and 'Cloth Masks'. The cost data for the year ended 31st March, 2022 is as follows:

	₹
Direct Materials	12,50,000
Direct Wages	7,00,000
Production Overhead	4,00,000
Total	23,50,000

It is further ascertained that:

- **Direct material cost per unit of Cloth Mask was twice as much of Direct material cost per unit of Disposable Mask.**
- **Direct wages per unit for Disposable Mask were 60% of those for Cloth Mask.**
- **Production overhead per unit was at same rate for both the types of the masks.**
- **Administration overhead was 50% of Production overhead for each type of mask.**
- **Selling cost was ₹ 2 per Cloth Mask.**
- **Selling Price was ₹ 35 per unit of Cloth Mask.**
- **No. of units of Cloth Masks sold- 45,000**
- **No. of units of Production of**

  Cloth Masks: 50,000

  Disposable Masks: 1,50,000

  You are required to prepare a cost sheet for Cloth Masks showing:

  (i) Cost per unit and Total Cost.

  (ii) Profit per unit and Total Profit. ***(PYP 10 Marks Nov'22) (RTP Jan'25)***

Answer 18

Preparation of Cost Sheet for Cloth Masks

No. of units produced = 50,000 units

No. of units sold = 45,000 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (i))	10.00	5,00,000
Direct wages (Working note- (ii))	5.00	2,50,000
Prime cost	15.00	7,50,000
Production overhead (Working note- (iii))	2.00	1,00,000
Factory Cost	17.00	8,50,000
Administration Overhead* (50% of Production Overhead)	1.00	50,000
Cost of production	18.00	9,00,000
Less: Closing stock (50,000 units – 45,000 units)	-	(90,000)
Cost of goods sold i.e. 45,000 units	18.00	8,10,000
Selling cost	2.00	90,000
Cost of sales/ Total cost	20.00	9,00,000
Profit	15.00	6,75,000
Sales value (₹ 35 × 45,000 units)	35.00	15,75,000

Working Notes:

(i) Direct material cost per unit of Disposable Mask = M

Direct material cost per unit of Cloth Mask = 2M

Total Direct Material cost = 2M × 50,000 units + M × 1,50,000 units

Or, ₹ 12,50,000 = 1,00,000 M + 1,50,000 M

Or, M $= \frac{Rs.12,50,000}{2,50,000}$ = Rs. 5

Therefore, Direct material Cost per unit of Cloth Mask = 2 × ₹ 5 = ₹ 10

(ii) Direct wages per unit for Cloth Mask = W

Direct wages per unit for Disposable Mask = 0.6W

So, (W x 50,000) + (0.6W x 1,50,000) = ₹ 7,00,000

W = ₹ 5 per unit

Therefore, Direct material Cost per unit of Cloth Mask = ₹ 5

(iii) Production overhead per unit = $\frac{Rs.4,00,000}{(50,000+1,50,000)}$ = Rs. 2

Production overhead for Cloth Mask = ₹ 2 × 50,000 units = ₹ 1,00,000

* Administration overhead is related to production overhead in the question and hence to be considered in cost of production only.

EXAM INSIGHTS: This Numerical problem on preparation of Cost Sheet requiring calculation of Cost per unit, Total Cost, Profit per unit and Total Profit. Most of the examinees failed to calculate Direct Materials and Direct Wages cost correctly. Overall performance of the examinees was **poor.**

Question 19

The following data relate to the manufacture of a product 'VD-100* during the month of October 2023:

Good units produced	**12,600**
Units Sold	**11,800**
Direct wages	**₹ 8,82,000**
Administrative Overheads	**₹ 4,72,000**
Selling price per unit	**₹ 416**

Each unit produced requires 2 kg. of material 'Z'. Cost of material 'Z' is ₹ 72 per kg. 10% of the production has been scrapped as bad and fetches ₹ 45 per unit. Factory overheads are 80% of wages. Selling and distribution overheads are ₹ 54 per unit sold. There is no opening or closing stock of material and work in progress. You are required to find out total cost of sales and profit for the month of October 2023.

(PYP 6 Marks Nov'23)

Answer 19

Since 10% units are scrapped.

Units produced (total) is 14,000 (12,600/90%)

Calculation of cost of sales and profit

Particulars	**₹**
Raw Material (28,000 × ₹ 72)	20,16,000
Wages	8,82,000
Prime Cost	**28,98,000**
Factory overheads	7,05,600
Factory Cost	**36,03,600**
Sale of Scrap (1,400 × ₹ 45)	(63,000)
Cost of Production	**35,40,600**
Less: Closing Stock of finished goods $\left(\frac{₹\ 35,40,600}{12,600} \times 800\right)$	2,24,800
Cost of goods sold	33,15,800
Add: Administration overheads	4,72,000
Add: Selling & Distribution overheads (₹ 54 x 11,800)	6,37,200
Cost of Sales	**44,25,000**
Sales (11,800 × ₹ 416)	49,08,800
Profit	**4,83,800**

EXAM INSIGHTS: Question requiring calculation of total cost of sales and profit for the month of a product based on the details given in the question. Most of the examinees could not calculate the input quantity correctly after adjusting for scrapped units. Hence Material cost was calculated wrongly which resulted in wrong calculation of total cost of sales. Performance of the examinees was **poor.**

Question 20

Luxury Designer Pvt. Ltd. is a manufacturing company, which manufactures readymade designer shirts. It has four customers: two wholesale category customers and two retail category customers. It has developed the following Activity- Based Costing system:

Activity	Cost Driver Rate (₹)
Order Processing	1,260 per purchase order
Customer Visits	1,500 per customer visit
Regular Delivery	30 per delivery Km. travelled
Expedited Delivery	4,490 per expedited delivery

List selling price per shirt is ₹ 1,000 and average cost per shirt is ₹ 600. CEO of Luxury Designer Pvt. Ltd. wants to evaluate the profitability of each of the four customers for the year 2023, to explore opportunities for increasing profitability of his Company in the next year 2024. The following data in context of four customers are available for 2023:

	Wholesale Customers		Retail Customers	
	WC-1	WC-2	RC-1	RC-2
Number of Purchase orders	50	65	224	245
Number of Customer visits	10	13	25	22
Regular Deliveries	46	52	175	198
Kilometers travelled per delivery	20	15	10	25
Expedited Deliveries	5	16	50	62
Average Number of Shirts per Shirt	215	110	18	15
Average Selling Price per Shirt	₹ 700	₹ 800	₹ 900	₹ 950

You are required to:

Calculate the customer-level operating income and operating income as a % of revenues in 2023 and rank them on the basis of relative profitability. ***(PYP 8 Marks May '24)***

Answer 20

Working note:

Computation of revenues (at listed price), discount, cost of goods sold and customer level operating activities costs:

	Wholesale Category Customers		Retail Category Customers	
	WC-1	WC-2	RC-1	RC-2
Number of shirts sold (a)	10,750 (215x50)	7,150 (110x65)	4,032 (18x224)	3,675 (15x245)
Revenues (at listed price) (₹): (b) {(a) × ₹ 1,000)}	1,07,50,000	71,50,000	40,32,000	36,75,000
Discount (₹): (c) {(a) × Discount per shirt}	32,25,000	14,30,000	4,03,200	1,83,750
Cost of shirts (₹) : (d) {(a) × ₹ 600}	64,50,000	42,90,000	24,19,200	22,05,000
Order taking costs (₹): (No. of purchase ×₹1,260)	63,000	81,900	2,82,240	3,08,700
Customer visits costs (₹) (No.of customer visits × ₹ 1,500)	15,000	19,500	37,500	33,000
Delivery vehicles travel costs (₹)(Kms travelled by delivery vehicles ×₹ 30 per km.)	27,600	23,400	52,500	1,48,500
Cost of expediting deliveries (₹) {No. of expedited deliveries ×₹ 4,490}	22,450	71,840	2,24,500	2,78,380
Total cost of customer level operating activities (₹)	1,28,050	1,96,640	5,96,740	7,68,580

Computation of Customer level operating income

	Wholesale Category Customers		Retail Category Customers	
	WC-1	WC-2	RC-1	RC-2
Revenues (At list price) (Refer to working note)	1,07,50,000	71,50,000	40,32,000	36,75,000

Less: Discount (Refer toworking note)	32,25,000	14,30,000	4,03,200	1,83,750
Revenue	75,25,000	57,20,000	36,28,800	34,91,250
(At actual price)				
Less: Cost of shirts (Refer to working note)	64,50,000	42,90,000	24,19,200	22,05,000
Gross margin	10,75,000	14,30,000	12,09,600	12,86,250
Less: Customer level operating activities costs(Refer to working note)	1,28,050	1,96,640	5,96,740	7,68,580
Customer level operating income	9,46,950	12,33,360	6,12,860	5,17,670
Operating income as a % of revenues	12.584%	21.562%	16.889%	14.828%
Rank	IV	I	II	III

Question 21

LDR

Vivit Su Ltd. has the capacity to produce 2,00,000 units of a product every month. Its works cost at varying levels of production is as under:

Level	Works cost per unit (Rs.)
10%	400
20%	390
30%	380
40%	370
50%	360
60%	350
70%	340
80%	330
90%	320
100%	310

Its fixed administration expenses amount to Rs 3,60,000 and fixed marketing expenses amount to Rs 4,80,000 per month respectively. The variable distribution cost amounts to ₹ 30 per unit.

It can sell 100% of its output at ₹ 500 per unit provided it incurs the following further expenditure:

(i) It gives gift items costing ₹ 30 per unit of sale;

(ii) It has lucky draws every month giving the first prize of Rs. 60,000; 2nd prize of Rs. 50,000, 3rd. prize of Rs. 40,000 and ten consolation prizes of Rs. 5,000 each to customers buying the product.

(iii) It spends Rs.2,00,000 on refreshments served every month to its customers;

(iv) It sponsors a television programmer every week at a cost of Rs.20,00,000 per month.

It can market 50% of its output at ₹ 560 by incurring expenses referred from (ii) to (iv) above and 30% of its output at ₹ 600 per unit without incurring any of the expenses referred from (i) to (iv) above.

PREPARE a cost sheet for the month showing total cost and profit at 30%, 50% and 100% capacity level & COMPARE its profit.

(MTP 10 Marks, Oct'20) (Same concept different figures MTP 10 Marks Apr'22, SM)

Answer 21

Cost Sheet (For the month)

Level of Capacity	30%		50%		100%	
	60,000 units		1,00,000 units		2,00,000 units	
	Per unit (₹)	Total (₹)	Per unit (₹)	Total (₹)	Per unit(₹)	Total(₹)
Works Cost	**380.00**	**2,28,00,000**	**360.00**	**3,60,00,000**	**310.00**	**6,20,00,000**
Add: Fixed administration expenses	6.00	3,60,000	3.60	3,60,000	1.80	3,60,000
Add: Fixed marketing expenses	8.00	4,80,000	4.80	4,80,000	2.40	4,80,000
Add: Variable distribution cost	30.00	18,00,000	30.00	30,00,000	30.00	60,00,000
Add: Special Costs:						
- Gift items costs	-	-	-	-	30.00	60,00,000
- Customers' prizes*	-	-	2.00	2,00,000	1.00	2,00,000

- Refreshments	-	-	2.00	2,00,000	1.00	2,00,000
- Television programme sponsorship cost	-	-	20.00	20,00,000	10.00	20,00,000
Cost of sales	**424.00**	**2,54,40,000**	**422.40**	**4,22,40,000**	**386.20**	**7,72,40,000**
Profit (Bal. fig.)	176.00	1,05,60,000	137.60	1,37,60,000	113.80	2,27,60,000
Sales revenue	**600.00**	**3,60,00,000**	**560.00**	**5,60,00,000**	**500.00**	**10,00,00,000**

*** Customers' prize cost:**

Particulars	Amount (₹)
1st Prize	60,000
2nd Prize	50,000
3rd Prize	40,000
Consolation Prizes (10 × ₹ 5,000)	50,000
Total	**2,00,000**

Comparison of Profit

30% capacity	50% capacity	100% capacity
Rs. 176/Rs. 600 × 100	Rs. 137.6 / Rs. 560 × 100	Rs.113.8 / Rs.500 × 100
29.33 %	**24.57%**	**22.76%**

Profit (in value as well as in percentage) is higher at 30% level of capacity than that at 50% and 100% level of capacity.

Question 22

Following information relate to a manufacturing concern for the year ended 31st March, 2023:

	(₹)
Raw Material (opening)	2,28,000
Raw Material (closing)	3,05,000
Purchases of Raw Material	43,50,000
Freight Inwards	1,20,000
Direct wages paid	12,56,000
Direct wages-outstanding at the end of the year	1,50,000
Factory Overheads	20% of prime cost
Work-in-progress (opening)	1,92,500
Work-in-progress (closing)	1,40,700
Administrative Overheads (related to production)	1,73,000
Distribution Expenses	₹ 16 per unit
Finished Stock (opening)- 1,320 Units	6,08,500
Sale of scrap of material	7,000

The firm produced 14,350 units of output during the year. The stock of finished goods at the end of the year is valued at cost of production. The firm sold 14,903 units at a price of ₹579 per unit during the year. PREPARE cost sheet of the firm. ***(MTP 8 Marks Apr'24,RTP May'19, PYP May'18, 10Marks)***

Answer 22

Cost sheet for the year ended 31st March, 2023.

Units produced - 14,000 units

Units sold - 14,153 units

Particulars	Amount (₹)
Raw materials purchased	43,50,000
Add: Freight Inward	1,20,000
Add: Opening value of raw materials	2,28,000
Less: Closing value of raw materials	(3,05,000)
	43,93,000
Less: Sale of scrap of material	(7,000)
Materials consumed	43,86,000

Direct Wages (12,56,000 + 1,50,000)	14,06,000
Prime Cost	57,92,000
Factory overheads (20% of Prime Cost)	11,58,400
Add: Opening value of W-I-P	1,92,500
Less: Closing value of W-I-P	(1,40,700)
Factory Cost	70,02,200
Add: Administrative overheads	1,73,000
Cost of Production	71,75,200
Add: Value of opening finished stock	6,08,500
Less: Value of closing finished stock [₹ 500(71,75,200/14,350) × 767] (1,320 + 14,350 – 14,903 = 767 units)	(3,83,500)
Cost of Goods Sold	74,00,200
Distribution expenses (₹16 × 14,903 units)	2,38,448
Cost of Sales	76,38,648
Profit (Balancing figure)	9,90,189
Sales (₹ 579 × 14,903 units)	86,28,837

Question 23

Impact Ltd. provides you the following details of its expenditures for the year ended 31st March, 2021:

Sr. No.	Particulars	Amount (₹)	Amount (₹)
(i)	Raw materials purchased		5,00,00,000
(ii)	GST paid under Composition scheme		10,00,000
(iii)	Freight inwards		5,20,600
(iv)	Trade discounts received		10,00,000
(v)	Wages paid to factory workers		15,20,000
(vi)	Contribution made towards employees' PF & ESIS		1,90,000
(vii)	Production bonus paid to factory workers		1,50,000
(viii)	Fee for technical assistance		1,12,000
(ix)	Amount paid for power & fuel		2,62,000
(x)	Job charges paid to job workers		4,50,000
(xi)	Stores and spares consumed		1,10,000
(xii)	Depreciation on:		
	Factory building	64,000	
	Office building	46,000	
	Plant & Machinery	86,000	1,96,000
(xiii)	Salary paid to supervisors		1,20,000
(xiv)	Repairs & Maintenance paid for:		
	Plant & Machinery	58,000	
	Sales office building	50,000	
	Vehicles used by directors	20,600	1,28,600
(xv)	Insurance premium paid for:		
	Plant & Machinery	31,200	
	Factory building	28,100	59,300
(xvi)	Expenses paid for quality control check activities		25,000
(xvii)	Research & development cost paid for improvement in production process		48,200
(xviii)	Expenses paid for administration of factory work		1,38,000
(xix)	Salary paid to functional mangers:		
	Production control	4,80,000	
	Finance & Accounts	9,60,000	
	Sales & Marketing	12,00,000	26,40,000
(xx)	Salary paid to General Manager		13,20,000

(xxi)	Packing cost paid for:		
	Primary packing necessary to maintain quality	1,06,000	
	For re-distribution of finished goods	1,12,000	2,18,000
(xxii)	Interest and finance charges paid (for usage of non- equity fund)		3,50,000
(xxiii)	Fee paid to auditors		1,80,000
(xxiv)	Fee paid to legal advisors		1,20,000
(xxv)	Fee paid to independent directors		2,40,000
(xxvi)	Payment for maintenance of website for online sales		1,80,000
(xxvii)	Performance bonus paid to sales staffs		2,40,000
(xxviii)	Value of stock as on 1st April, 2020:		
	Raw materials	9,00,000	
	Work-in-process	4,00,000	
	Finished goods	7,00,000	20,00,000
(xxix)	Value of stock as on 31st March, 2021:		
	Raw materials	5,60,000	
	Work-in-process	2,50,000	
	Finished goods	11,90,000	20,00,000

Amount realized by selling of waste generated during manufacturing process – ₹ 66,000/-

From the above data, you are required to PREPARE Statement of cost of Impact Ltd. for the year ended 31st March, 2021, showing (i) Prime cost, (ii) Factory cost, (iii) Cost of Production, (iv) Cost of goods sold and (v) Cost of sales. *(RTP Nov'21)*

Answer 23

Statement of Cost of Impact Ltd. for the year ended 31st March, 2021:

Sl.No.	Particulars	Amount (₹)	Amount (₹)
(i)	Material Consumed:		
	Raw materials purchased	5,00,00,000	
	GST paid under Composition scheme*	10,00,000	
	Freight inwards	5,20,600	
	Less: Trade discounts received	(10,00,000)	
	Add: Opening stock of raw materials	9,00,000	
	Less: Closing stock of raw materials	(5,60,000)	5,08,60,600
(ii)	Direct employee (labour) cost:		
	Wages paid to factory workers	15,20,000	
	Contribution made towards employees' PF & ESIS	1,90,000	
	Production bonus paid to factory workers	1,50,000	18,60,000
(iii)	Direct expenses:		
	Fee for technical assistance	1,12,000	
	Amount paid for power & fuel	2,62,000	
	Job charges paid to job workers	4,50,000	8,24,000
	Prime Cost		**5,35,44,600**
(iv)	Works/ Factory overheads:		
	Stores and spares consumed	1,10,000	
	Depreciation on factory building	64,000	
	Depreciation on plant & machinery	86,000	
	Repairs & Maintenance paid for plant & machinery	58,000	
	Insurance premium paid for plant & machinery	31,200	
	Insurance premium paid for factory building	28,100	
	Salary paid to supervisors	1,20,000	4,97,300
	Gross factory cost		**5,40,41,900**
	Add: Opening value of W-I-P		4,00,000
	Less: Closing value of W-I-P		(2,50,000)

	Factory Cost		**5,41,91,900**
(v)	Quality control cost:		
	Expenses paid for quality control check activities		25,000
(vi)	Research & development cost paid for improvement in production process		48,200
(vii)	Administration cost related with production:		
	-Expenses paid for administration of factory work	1,38,000	
	-Salary paid to Production control manager	4,80,000	6,18,000
(viii)	Less: Realisable value on sale of scrap and waste		(66,000)
(ix)	Add: Primary packing cost		1,06,000
	Cost of Production		**5,49,23,100**
	Add: Opening stock of finished goods		7,00,000
	Less: Closing stock of finished goods		(11,90,000)
	Cost of Goods Sold		**5,44,33,100**
(x)	Administrative overheads:		
	Depreciation on office building	46,000	
	Repairs & Maintenance paid for vehicles used by directors	20,600	
	Salary paid to Manager- Finance & Accounts	9,60,000	
	Salary paid to General Manager	13,20,000	
	Fee paid to auditors	1,80,000	
	Fee paid to legal advisors	1,20,000	
	Fee paid to independent directors	2,40,000	28,86,600
(xi)	Selling overheads:		
	Repairs & Maintenance paid for sales office building	50,000	
	Salary paid to Manager- Sales & Marketing	12,00,000	
	Payment for maintenance of website for online sales	1,80,000	
	Performance bonus paid to sales staffs	2,40,000	16,70,000
(xii)	Packing cost paid for re-distribution of finished goods		1,12,000
(xiii)	Interest and finance charges paid		3,50,000
	Cost of Sales		**5,94,51,700**

* GST paid under Composition scheme would be included under cost of material as it is not eligible for input tax credit.

Question 24

The following data are available from the books and records of Q Ltd. for the month of April 2020:
Direct Labour Cost = ₹ 1,20,000 (120% of Factory Overheads)
Cost of Sales = ₹ 4,00,000
Sales = ₹ 5,00,000
Accounts show the following figures:

	1st April, 2020 (₹)	30th April, 2020 (₹)
Inventory:		
Raw material	20,000	25,000
Work-in-progress	20,000	30,000
Finished goods	50,000	60,000
Other details:		
Selling expenses		22,000
General & Admin. expenses		18,000

You are required to prepare a cost sheet for the month of April 2020 showing:
(i) Prime Cost
(ii) Works Cost
(iii) Cost of Production
(iv) Cost of Goods sold

(v) **Cost of Sales and Profit earned.** ***(PYP 10 Marks Jan'21)***

Answer 24

Cost Sheet for the Month of April 2020

Particulars	**(₹)**
Opening stock of Raw Material	20,000
Add: Purchases [Refer Working Note-2]	1,65,000
Less: Closing stock of Raw Material	(25,000)
Raw material consumed	1,60,000
Add: Direct labour cost	1,20,000
Prime cost	**2,80,000**
Add: Factory overheads	1,00,000
Gross Works cost	**3,80,000**
Add: Opening work-in-progress	20,000
Less: Closing work-in-progress	(30,000)
Works Cost	**3,70,000**
Cost of Production	**3,70,000**
Add: Opening stock of finished goods	50,000
Less: Closing stock of finished goods	(60,000)
Cost of goods sold	**3,60,000**
Add: General and administration expenses*	18,000
Add: Selling expenses	22,000
Cost of sales	**4,00,000**
Profit {Balancing figure (₹ 5,00,000 – ₹ 4,00,000)}	1,00,000
Sales	5,00,000

*General and administration expenses have been assumed as not relating to the production activity.

Working Note:

1. Computation of the raw material consumed

Particulars	**(₹)**
Cost of Sales	4,00,000
Less: General and administration expenses	(18,000)
Less: Selling expenses	(22,000)
Cost of goods sold	3,60,000
Add: Closing stock of finished goods	60,000
Less: Opening stock of finished goods	(50,000)
Cost of production/Gross works cost	3,70,000
Add: Closing stock of work-in-progress	30,000
Less: Opening stock of work-in- progress	(20,000)
Works cost	3,80,000
Less: Factory overheads $(\frac{Rs.1,20,000}{120} X100)$	(1,00,000)
Prime cost	2,80,000
Less: Direct labour	(1,20,000)
Raw material consumed	1,60,000

2. Computation of the raw material purchased

Particulars	**(₹)**
Closing stock of Raw Material	25,000
Add: Raw Material consumed	1,60,000
Less: Opening stock of Raw Material	(20,000)
Raw Material purchased	1,65,000

Question 25

The following data relates to the manufacture of product VIVI for the year ended 31st March,2023:

	Amount (₹)
Value of stock as on 1st April,2022	
Raw materials	27,00,000
Work in progress	10,60,000
Finished Goods	25,00,000
Material purchased	2,48,00,000
Freight inward	7,50,000
Direct wages	42,00,000
Power & Fuel	18,75,000
Cost of special drawings	3,60,000
Trade Discount	4,50,000
Insurance on material procured	15,000
Rent of Factory Building (1/5th used for office purpose)	7,00,000
Depreciation on machinery	6,25,000
Depreciation on Delivery Vans	1,20,000
Consumable stores and indirect wages	15,20,000
Quality Control cost	9,00,000
Primary packing cost	12,90,000
General Administrative overheads (excluding rent of building)	17,50,000
Salary paid to Marketing Staff	9,60,000
Packing cost for transportation	1,84,000
Value of stock as on 31st March, 2023	
Raw materials	32,60,000
Work in progress	11,80,000
Finished Goods	28,38,000

Additional Information:

- **Further, some of the finished product was found defective and the defective products were rectified by incurring expenditure of additional factory overheads to the extent of ₹ 33,600. The cost of rectification is not included in details mentioned above.**
- **An amount of ₹ 1,20,600 was realized by selling scrap and waste generated during the year.**

Prepare Cost sheet for the year ended 31stMarch, 2023 showing:

(i) **Prime cost,**
(ii) **Factory cost,**
(iii) **Cost of production.**
(iv) **Cost of goods sold, and**
(v) **Cost of sales.** ***(PYP 10 Marks Nov'23)***

Answer 25

Cost Sheet for the product VIVI

Sl. No.	Particulars	(₹)	(₹)
(i)	Material Consumed:		
	Raw materials purchased	2,48,00,000	
	Freight inwards	7,50,000	
	Insurance on material procured	15,000	
	Less: Trade discount	(4,50,000)	
	Add: Opening stock of raw materials	27,00,000	
	Less: Closing stock of raw materials	(32,60,000)	2,45,55,000
(ii)	Direct wages		42,00,000
(iii)	Direct expenses:		
	Power & fuel	18,75,000	

	Cost of special drawings	3,60,000	22,35,000
	Prime Cost		**3,09,90,000**
(iv)	Works/ Factory overheads:		
	Rent of factory building (4/5th of 7,00,000)	5,60,000	
	Depreciation on machinery	6,25,000	
	Defective rectification cost	33,600	
	Consumable stores & indirect wages	15,20,000	27,38,600
	Gross works cost		3,37,28,600
	Add: Opening work in process		10,60,000
	Less: Closing work in process		(11,80,000)
	Factory cost		**3,36,08,600**
(v)	Quality control cost		9,00,000
(vi)	Primary packing cost		12,90,000
(vii)	Less: Amount realized from scrap sale		(1,20,600)
	Cost of production		**3,56,78,000**
	Add: Opening stock of finished goods		25,00,000
	Less: Closing stock of finished goods		(28,38,000)
	Cost of Goods Sold		**3,53,40,000**
	Administrative overheads:		
(viii)	Rent of factory building (1/5th of 7,00,000)		1,40,000
	General administrative overheads		17,50,000
	Selling and Distribution overheads:		
(x)	Salary paid to marketing staff		9,60,000
(xi)	Packing cost for transportation		1,84,000
(xii)	Depreciation on delivery vans		1,20,000
	Cost of Sales		**3,84,94,000**

Alternatively, Power and fuel expenses of ₹ 18,75,000 can be taken as a part of factory overhead. Accordingly, prime cost will be 2,91,15,000. However, there will be no change in factory cost, cost of production, cost of goods sold and cost of sales.

EXAM INSIGHTS: Question on preparation of cost sheet showing the various elements of cost. Most of the examinees could not classify the items under correct heads. Overall performance of the was **average.**

Question 26

LDR

WEPL Ltd is engaged in producing electronic equipments. It has furnished following details related to its products produced during a month:

	Units	Amount (₹)
Opening stock	10,000	5,00,00,000
Purchases	4,90,000	25,20,00,000
Closing stock	17,500	85,00,000
Works-in-progress		
Opening	20,000	1,20,00,000
Closing	10,000	60,50,000
Direct employees' wages, allowancesetc.		5,50,50,000
Primary packaging cost (per unit)		140
R&D expenses & Quality controlexpenses		1,90,00,000
Guards' salaries		20,00,000
Directors' salaries		60,00,000
Consumable stores, depreciation onplant related to factory overhead		3,42,00,000
Product inspection (before primarypackaging)		22,00,000
Rearrangement design of factorymachine		75,00,000
Administrative overheads related to production		3,45,00,000

Selling expenses		3,94,50,000
Royalty paid for production		3,10,50,000
Cost of web-site (for online sale) maintenance		60,75,000
Gifts & Snacks		30,50,000
GST (credit allowed)		5,50,00,000
AMC cost of CCTV		10,00,000
Hiring of cars for the transportation of employees and guests		25,00,000
Audit and Legal Fees		29,00,000
Secondary packaging cost (per unit)		20

Distribution of the following costs:
Guard's salaries to Factory, Office and Distribution in the ratio 7: 2:1.
Hiring of cars is only for selling and distribution
AMC of CCTV to Factory, Office and Selling in the ratio 6 : 2 : 2.

The company paid EPF of 12% over above basic pay. However, Guardswill not receive any incentive or EPF.
It has lucky draws every month giving the first prize of ₹1,00,000; 2nd prize of ₹50,000, 3rd prize of ₹ 20,000 and three consolation prizes of ₹10,000 each to customers buying the product.
It also sponsors a television programme every week at a cost of ₹20,00,000 per month.
The hiring of cars attracts GST under RCM @5% without credit.
There was a normal scrap of 2,000 units of direct material which realized ₹350 per unit. The entire finished product was sold at a profit margin of25% on sales.
You are required to PREPARE a cost sheet *(MTP 7 Marks Aug'24)*

Answer 26

Cost Sheet

Particulars	Units	Amount (₹)
Material		
Opening stock	10,000	5,00,00,000
Add: Purchases	4,90,000	25,20,00,000
Less: Closing stock	(17,500)	(85,00,000)
	4,82,500	**29,35,00,000**
Less: Normal wastage of materials realized@ ₹350 per unit	(2,000)	(7,00,000)
Material consumed		29,28,00,000
Direct employee's wages and allowances		5,50,50,000
Direct expenses- Royalty paid for production		3,10,50,000
Prime cost	4,80,500	**37,89,00,000**
Factory overheads - Consumable stores,depreciation etc.		3,42,00,000
Rearrangement design of factory machine		75,00,000
Gross Works Cost	4,80,500	**38,64,00,000**
Add: Opening WIP	20,000	1,20,00,000
Less: Closing WIP	(10,000)	(60,50,000)
Factory/Works Cost	4,90,500	**39,23,50,000**
AdministrationOverheads related to production		3,45,00,000
R&D expenses and Quality control cost		1,90,00,000
AMC cost of CCTV installed at factory premises		6,00,000
Guard Salaries for factory premises		14,00,000
Product Inspection		22,00,000
Add: Primary packaging cost @ ₹ 140 per unit		6,86,70,000
Cost of production	4,90,500	**51,87,20,000**
Administration Overheads		
Guard salaries for office		4,00,000

Audit and legal fees		29,00,000
Director's Salaries		60,00,000
EPF Director's Salaries @12%		7,20,000
AMC cost for CCTV installed at office.		2,00,000
Selling and Distribution Overheads		
Cost of maintaining website for online sale		60,75,000
Secondary packaging cost @ ₹ 20 per unit	4,90,500	98,10,000
Gift and snacks		30,50,000
Guard salaries for selling department		2,00,000
AMC cost for CCTV installed at selling department		2,00,000
Hiring charges of cars		25,00,000
Add: GST @5% on RCM basis		1,25,000
Television programme sponsorship cost		20,00,000
Customers' prize cost*		2,00,000
Selling expenses		3,94,50,000
Cost of sales		**58,64,75,000**
Add: Profit @ 25% on sales or 33.333% of cost		19,54,89,712
Sales value		**78,19,64,712**

***Customers' prize cost:**

	Amount (₹)
1st Prize	1,00,000
2nd Prize	50,000
3rd Prize	20,000
Consolation Prizes (3 × ₹10,000)	30,000
Total	**2,00,000**

***Customers' prize cost:**

	Amount (₹)
1st Prize	1,00,000
2nd Prize	50,000
3rd Prize	20,000
Consolation Prizes (3 × ₹10,000)	30,000
Total	**2,00,000**

Question 27

P Ltd. has gathered cost information from ledgers and other sources for the year ended 31st December 2023. The information is tabulated below:

Sl. No.		Amount (₹)	Amount (₹)
(i)	Raw materials purchased		5,00,00,000
(ii)	Freight inward		9,20,600
(iii)	Wages paid to factory workers		25,20,000
(iv)	Royalty paid for production		1,80,000
(v)	Amount paid for power & fuel		3,50,000
(vi)	Job charges paid to job workers		3,10,000
(vii)	Stores and spares consumed		1,10,000
(viii)	Depreciation on office building		50,000
(ix)	Repairs & Maintenance paid for:		
	- Plant & Machinery	40,000	
	- Sales office building	20,000	60,000

(x)	Insurance premium paid for:		
	- Plant & Machinery	28,200	
	- Factory building	18,800	47,000
(xi)	Expenses paid for quality controlcheck activities		18,000
(xii)	Research & development cost paid for improvement in production process		20,000
(xiii)	Expenses paid for pollution control and engineering & maintenance		36,000
(xiv)	Salary paid to Sales & Marketingmanagers		5,60,000
(xv)	Salary paid to General Manager		6,40,000
(xvi)	Packing cost paid for:		
	- Primary packing necessary to maintain quality	46,000	
	- For re-distribution of finished goods	80,000	1,26,000
(xvii)	Fee paid to independent directors		1,20,000
(xviii)	Performance bonus paid to sales staffs		1,20,000
(xix)	Value of stock as on 1stJanuary, 2023:		
	- Raw materials	10,00,000	
	- Work-in-process	8,60,000	
	- Finished goods	12,00,000	30,60,000
(xx)	Value of stock as on 31stDecember, 2023:		
	- Raw materials	8,40,000	
	- Work-in-process	6,60,000	
	- Finished goods	10,50,000	25,50,000

Amount realized by selling of scrap and waste generated during manufacturing process – ₹ 48,000/-
The board meeting is scheduled to be held in next week and you being an associate to the chief cost controller of the company, has been asked to PREPARE a cost sheet. *(RTP May'24, May'21, MTP 10 Marks, Mar'21 & Sep'23)* (Same concept different figures MTP 10 Marks Nov'21 & Apr'23)

Answer 27

Statement of Cost of P Ltd. for the year ended 31st December, 2023:

Sl. No.	Particulars	Amount (₹)	Amount (₹)
(i)	Material Consumed:		
	- Raw materials purchased	5,00,00,000	
	- Freight inward	9,20,600	
	Add: Opening stock of raw materials	10,00,000	
	Less: Closing stock of raw materials	(8,40,000)	5,10,80,600
(ii)	Direct employee (labour) cost:		
	- Wages paid to factory workers		25,20,000
(iii)	Direct expenses:		
	- Royalty paid for production	1,80,000	
	- Amount paid for power & fuel	3,50,000	
	- Job charges paid to job workers	3,10,000	8,40,000
	Prime Cost		5,44,40,600
(iv)	Works/ Factory overheads:		
	- Stores and spares consumed	1,10,000	
	- Repairs & Maintenance paid for plant & machinery	40,000	
	- Insurance premium paid for plant & machinery	28,200	
	- Insurance premium paid for factory building	18,800	
	- Expenses paid for pollution control and engineering & maintenance	36,000	2,33,000
	Gross factory cost		5,46,73,600
	Add: Opening value of W-I-P		8,60,000

	Less: Closing value of W-I-P		(6,60,000)
	Factory Cost		5,48,73,600
(v)	Quality control cost:		
	- Expenses paid for quality control check activities		18,000
(vi)	Research & development cost paid for improvement in production process		20,000
(vii)	Less: Realizable value on sale of scrap and waste		(48,000)
(viii)	Add: Primary packing cost		46,000
	Cost of Production		5,49,09,600
	Add: Opening stock of finished goods		12,00,000
	Less: Closing stock of finished goods		(10,50,000)
	Cost of Goods Sold		5,50,59,600
(ix)	Administrative overheads:		
	- Depreciation on office building	50,000	
	- Salary paid to General Manager	6,40,000	
	- Fee paid to independent directors	1,20,000	8,10,000
(x)	Selling overheads:		
	- Repairs & Maintenance paid for sales office building	20,000	
	- Salary paid to Manager- Sales & Marketing	5,60,000	
	- Performance bonus paid to sales staffs	1,20,000	7,00,000
(xi)	Distribution overheads:		
	- Packing cost paid for re-distribution of finished goods		80,000
	Cost of Sales		5,66,49,600

Question 28

LDR

The following information is available from SN Manufacturing Limited's for the month of April 2023.

	April 1	April 30
Opening and closing inventories data:		
Stock of finished goods	**2,500 units**	**?**
Stock of raw materials	**₹ 42,500**	**₹ 38,600**
Work-in progress	**₹ 42,500**	**₹ 42,800**
Other data are: Raw materials Purchased		**₹ 6,95,000**
Carriage inward		**₹ 36,200**
Direct wages paid		**₹ 3,22,800**
Royalty paid for production		**₹ 35,800**
Purchases of special designs, moulds and patterns (estimated life 12 Production cycles)		**₹ 1,53,600**
Power, fuel and haulage (factory)		**₹ 70,600**
Research and development costs for improving the production process (amortized)		**₹ 31,680**
Primary packing cost (necessary to maintain quality)		**₹ 6920**
Administrative Overhead		**₹ 46,765**
Salary and wages for supervisor and foremen		**₹ 28,000**

Other information:

- **Opening stock of finished goods is to be valued at ₹ 8.05 per unit.**
- **During the month of April, 1,52,000 units were produced and 1,52,600 units were sold. The closing stock of finished goods is to be valued at the relevant month's cost of production. The company follows the**

FIFO method.

- Selling and distribution expenses are to be charged at 20 paisa per unit.
- Assume that one production cycle is completed in one month.

Required:

(i) Prepare a cost sheet for the month ended on April 30, 2023, showing the various elements of cost (raw material consumed, prime cost, factory cost, cost of production, cost of goods sold, and cost of sales).

(ii) Calculate the selling price per unit if profit is charged at 20 percent on sales. *(PYP 10 Marks, May'23)*

Answer 28

Cost Sheet for the month of April 2023

Particulars	Amount(₹)	Amount(₹)
Raw materials consumed:		
Raw materials purchased	6,95,000	
Add: Carriage inward	36,200	
Add: Value of opening stock of raw materials	42,500	
Less: Value of closing stock of raw materials	(38,600)	**7,35,100**
Direct wages paid		3,22,800
Royalty paid for production		35,800
Amortised cost of special designs, moulds and patterns (₹153,600 ÷ 12)		12,800
Power, fuel and haulage (factory)*		70,600
Prime Cost*		**11,77,100**
Salary and wages of supervisor and foremen		28,000
Gross Works Cost		12,05,100
Add: Opening stock of WIP		42,500
Less: Closing stock of WIP		(42,800)
Factory/ Works Cost		**12,04,800**
Research and development cost	31,680	
Primary packing cost	6,920	38,600
Cost of Production		12,43,400
Add: Opening stock of finished goods (₹ 8.05 × 2,500 units)		20,125
Less: Value of closing stock [(2,500+152,000 -1,52,600) × (12,43,400 ÷ 152000)		(15,542)
Cost of Goods Sold		12,47,983
Add: Administrative overheads		46,765
Add: Selling and distribution expenses (₹ 0.20 × 1,52,600)		30,520
Cost of Sales		13,25,268
Add: Profit (20% on Sales or 25% on cost of sales)		3,31,317
Sales value		16,56,585
Selling price per unit (₹ 16,56,585 ÷ 1,52,600 units)		10.86

*May be taken as part of Factory / Works cost, however Total Factory Cost will remain the same. If taken as part of factory cost then prime cost will be ₹ 11,06,500.

Alternative Solution (Based on work-in-progress figure of ₹ 45,500 as on 1st April 2023 as per Hindi part of Question paper)

Particulars	Amount(₹)	Amount(₹)
Raw materials consumed:		
Raw materials purchased	6,95,000	
Add: Carriage inward	36,200	
Add: Value of opening stock of raw materials	42,500	
Less: Value of closing stock of raw materials	(38,600)	7,35,100
Direct wages paid		3,22,800
Royalty paid for production		35,800
Amortised cost of special designs, moulds and patterns (₹ 153,600 ÷ 12)		12,800
Power, fuel and haulage (factory)*		70,600
Prime Cost		**11,77,100**
Salary and wages of supervisor and foremen		28,000
Gross Works Cost		12,05,100
Add: Opening stock of WIP		45,500
Less: Closing stock of WIP		(42,800)
Factory/ Works Cost		**12,07,800**
Research and development cost	31,680	
Primary packing cost	6,920	38,600
Cost of Production		**12,46,400**
Add: Opening stock of finished goods (₹ 8.05 × 2,500 units)		20,125
Less: Value of closing stock [(2,500+1,52,000 -1,52,600) × (12,46,400÷1,52,000)		(15,580)
Cost of Goods Sold		**12,50,945**
Add: Administrative overheads		46,765
Add: Selling and distribution expenses (₹ 0.20 × 1,52,600)		30,520
Cost of Sales		**13,28,230**
Add: Profit (20% on Sales or 25% on cost of sales)		3,32,058
Sales value		16,60,288
Selling price per unit (₹ 16,60,288 ÷ 1,52,600 units)		**10.88**

*May be taken as part of Factory / Works cost, however Total Factory Cost will remain the same. If taken as part of factory cost then prime cost will be ₹ 11,06,500.

EXAM INSIGHTS: This numerical question was based on the Cost Sheet. Most of the examinees could not be able to classify the items under the correct headings. Hence, **a below average** performance was observed.

Question 29

MNP Limited have the capacity to produce 84,000 units of a product very month. Its prime cost per unit at various levels of production is as follows:

Level	Prime Cost per unit (₹)
10%	50
20%	48
30%	46
40%	44
50%	42

60%	40
70%	38
80%	36
90%	34
100%	32

Its prime cost consists of raw material consumed, direct wages and direct expenses in the ratio of 3 : 2 : 1. In the month of January 2024, the company worked at 40% capacity and raw material purchased amounting to ₹ 8,40,000. In the month of February 2024, the company worked at 100% capacity and raw material purchased for ₹ 16,46,400.

It is the policy of the company to maintain opening stock of raw material equal to 1/3 of closing stock of raw material. Factory overheads are recovered at 60% of direct wages cost. Fixed administration expenses (as part of production cost) and fixed selling and distribution expenses are ₹ 2,01,600 and ₹ 1,68,000 per month respectively. During the month of January 2024 company sold 33,600 units @ ₹ 68.8 per unit. The variable distribution cost amounts to ₹ 1.5 per unit sold.

The management of the company chalks out a pl for the month of February 2024 to sell its whole output @ ₹ 61 per unit by incurring following further expenditure:

(i) Company sponsors a television programme on every Sunday at a cost of ₹ 26,250 per week. There are 4 Sundays in February 2024.

(ii) Hi-tea programme every month for its potential customers at a cost of ₹ 1,05,000.

(iii) Special gift item costing ₹ 105 on sale of a dozen units.

(iv) Lucky draws scheme is introduced every month by giving the first prize of ₹ 1,00,000; second prize of ₹ 80,000; third prize of ₹ 40,000 and four consolation prizes of ₹ 8,000 each.

Note: (In the month of February 2024, there is a significant saving in material cost per unit due to entry of new suppliers in the market and saving in per unit cost of Direct wages and Direct expenses due to introduction of new· policy by the management.)

Prepare a cost sheet for the month of January 2024 and February 2024 showing prime cost (with different elements of prime cost), factory cost, cost of production, total cost and profit earned.

(PYP 8 Marks Sep'24)

Answer 29

Cost Sheet

Particulars	January 2024	February 2024
	33,600 Units	84,000 Units
Opening Stock of Raw Material	50,400	1,51,200
Add: Purchases	8,40,000	16,46,400
Less: Closing stock of Raw Material	(1,51,200)	(4,53,600)
Direct materials consumed:	**7,39,200**	**13,44,000**
Direct Wages	4,92,800	8,96,000
Direct expenses	2,46,400	4,48,000
Prime Cost	**14,78,400**	**26,88,000**
Factory overheads (60% of directwages)	2,95,680	5,37,600
Factory / Works Cost	**17,74,080**	**32,25,600**
Add: Administration overhead(Production)	2,01,600	2,01,600
Cost of Production / Cost of goodssold	**19,75,680**	**34,27,200**
Add: Fixed selling and distributionOverhead	1,68,000	1,68,000
Variable distribution overheads(₹1.5 per unit)	50,400	1,26,000
- Sponsorship cost	-	1,05,000
- Hi tea programme	-	1,05,000
- Special gifts (84,000 x 1/12 x 105)	-	7,35,000
- Lucky draw prize *	-	2,52,000
Cost of sales / Total Cost	**21,94,080**	**49,18,200**
Profit (Balancing figure)	1,17,600	2,05,800
Sales revenue	**23,11,680**	**51,24,000**

***Lucky draw prize:**

	Amount (₹)
1st Prize	1,00,000
2nd Prize	80,000
3rd Prize	40,000
Consolation Prizes (4 × ₹8,000)	32,000
Total	2,52,000

Working note :

Calculation of opening and costing stock of Raw MaterialJanuary

Units Manufactured = 84,000 x 40% = 33,600 units
Prime Cost = 33,600 x 44 = ₹14,78,400
Raw Material consumed = ₹14,78,400 X 3/6 = ₹7,39,200
Raw Material purchase (given) = ₹8,40,000
Let closing stock of Raw Material be x
Opening stock of Raw Material be 1/3x
Opening Stock + Purchase – closing stock = Raw Material consumed
1/3x + ₹8,40,000 – x = ₹7,39,200
1/3x – x = ₹7,39,200 – ₹8,40,000
2/3x = ₹1,00,800
x = ₹1,51,200 (closing stock)
Opening stock = ₹1,51,200 x 1/3 = ₹50,400

February

Prime Cost = 84,000 x 32 = ₹26,88,000
Raw Material consumed = ₹26,88,000 x 3/6 = ₹13,44,000
Raw Material purchased (given) = ₹16,46,400
Opening Stock + Purchase – closing stock = Raw Material consumed
₹1,51,200 + ₹16,46,400 – closing stock = ₹13,44,000
Closing stock = ₹4,53,600

Question 30

LDR

Following information is available from the books of YSPP Ltd. for the current year ending 31st March:

S. No.	Particulars	(₹)	(₹)
(i)	Raw materials purchased		35,00,00,000
(ii)	Freight inwards		39,22,100
(iii)	Wages paid to factory workers		1,02,20,000
(iv)	Contribution made towards employees' PF & ESIS		12,60,000
(v)	Hire charges paid for hiring specific equipment		8,40,000
(vi)	Amount paid for power & fuel		16,17,000
(vii)	Amount paid for purchase of moulds and patterns (life is equivalent to four years production)		31,36,000
(viii)	Job charges paid tojob workers		28,42,000
(ix)	Lease rent paid for production assets		3,92,000
(x)	Depreciation on:		
	Factory building	2,94,000	
	Office building	1,96,000	
	Plant & Machinery	4,41,000	
	Delivery vehicles	3,01,000	12,32,000
(xi)	Salary paid to supervisors		4,41,000
(xii)	Repairs & Maintenance paid for: Plant & Machinery	1,68,000	
	Sales office building	63,000	2,31,000
(xiii)	Insurance premium paid for:		
	Plant & Machinery	1,09,200	
	Factory building	63,350	

	Stock of raw materials & WIP	1,26,000	2,98,550
(xiv)	Expenses paid for quality control check activities		68,600
(xv)	Salary paid to quality control staffs		3,36,700
(xvi)	Research & development cost paid for improvement in production process		63,700
(xvii)	Expenses paid for administration of factory work		4,15,100
(xviii)	Salary paid to functional mangers:		
	Production control	33,60,000	
	Finance & Accounts	32,13,000	
	Sales & Marketing	35,42,000	1,01,15,000
(xix)	Salary paid to General Manager		43,96,000
(xx)	Packing cost paid for:		
	Primary packing necessary to maintain quality	3,36,000	
	For re-distribution of finished goods	3,92,000	7,28,000
(xxi)	Fee paid to auditors		6,30,000
(xxii)	Fee paid to independent directors		7,70,000
(xxiii)	Value of stock as on 1st April (beginning):		
	Raw materials	63,00,000	
	Work-in-process	32,20,000	
	Finished goods	38,50,000	1,33,70,000
(xxiv)	Value of stock as on 31st March (ending):		
	Raw materials	33,60,000	
	Work-in-process	30,45,000	
	Finished goods	63,00,000	1,27,05,000

Due to delay in picking up cargo from the port, YSPP Ltd. had to pay ₹ 15,000 as demurrage in the month of March.

From the above data you are required to PREPARE Statement of cost for YSPP Ltd. for the year ended 31st March, showing (i) Prime cost, (ii) Factory cost, (iii) Cost of Production, (iv) Cost of sales.

(MTP 8 Marks Nov'24)

Answer 30

Statement of Cost of YSPP Ltd. for the year ended 31st March:

S. NO.	PARTICULARS	(₹)	(₹)
(I)	Material consumed:		
	Raw materials purchased	35,00,00,000	
	Freight inwards	39,22,100	
	Add: opening stock of raw materials	63,00,000	
	Less: closing stock of raw materials	(33,60,000)	35,68,62,100
(II)	Direct employee (labour) cost:		
	Wages paid to factory workers	1,02,20,000	
	Contribution made towards employees' PF & ESIS	12,60,000	1,14,80,000
(III)	Direct expenses:		
	Hire charges paid for hiring specific equipment	8,40,000	
	Amount paid for power & fuel	16,17,000	
	Amortised cost of moulds and patterns	7,84,000	
	Job charges paid to job workers	28,42,000	60,83,000
	Prime cost		**37,44,25,100**
(IV)	Works/ factory overheads:		
	Lease rent paid for production assets	3,92,000	
	Depreciation on factory building	2,94,000	
	Depreciation on plant & machinery	4,41,000	
	Repairs & maintenance paid for plant & machinery	1,68,000	
	Insurance premium paid for plant & machinery	1,09,200	
	Insurance premium paid for factory building	63,350	

	Insurance premium paid for stock of raw materials & WIP	1,26,000	
	Salary paid to supervisors	4,41,000	20,34,550
	Gross factory cost		37,64,59,650
	Add: opening value of w-i-p		32,20,000
	Less: closing value of w-i-p		(30,45,000)
	Factory cost		**37,66,34,650**
(V)	Quality control cost:		
	Expenses paid for quality control check activities	68,600	
	Salary paid to quality control staffs	3,36,700	4,05,300
(VI)	Research & development cost paid for improvement in production process		63,700
(VII)	Administrationcost related with production:		
	-Expenses paid for administration of factory work	4,15,100	
	-Salarypaid to production control manager	33,60,000	37,75,100
(VIII)	Add: primary packing cost		3,36,000
	Cost of production		**38,12,14,750**
	Add: opening stock of finished goods		38,50,000
	Less: closing stock of finished goods		(63,00,000)
	Cost of goods sold		37,87,64,750
(IX)	Administrative overheads:		
	Depreciation on office building	1,96,000	
	Salary paid to manager- finance & accounts	32,13,000	
	Salary paid to general manager	43,96,000	
	Fee paid to auditors	6,30,000	
	Fee paid to independent directors	7,70,000	92,05,000
(X)	Selling overheads:		
	Repairs & maintenance paid for sales office building	63,000	
	Salary paid to manager- sales & marketing	35,42,000	36,05,000
(XI)	Distribution overheads:		
	Depreciation on delivery vehicles	3,01,000	
(XII)	Packing cost paid for re- distribution of finished goods	3,92,000	6,93,000
	Cost of sales		**39,22,67,750**

Note: Demurrage is a type of penalty, thus will not form part of cost.

Multiple Choice Questions (MCQ)

1. Generally, for the purpose of cost sheet preparation, costs are classified on the basis of: *(SM)*

(a) Functions
(b) Variability
(c) Relevance
(d) Nature

Ans: (a)

2. Which of the following does not form part of prime cost: *(SM)*

(a) Cost of packing
(b) Cost of transportation paid to bring materials to factory
(c) GST paid on raw materials (input credit cannot be claimed)
(d) Overtime premium paid to workers.

Ans: (a)

3. **A Ltd. received an order, for which it purchased a special frame for manufacturing, it is a part of:** ***(SM)***

(a) Direct Materials
(b) Direct expenses
(c) Factory Overheads
(d) Administration Overheads

Ans: (b)

4. **Salary paid to plant supervisor is a part of** ***(SM)***

(a) Direct expenses
(b) Factory overheads
(c) Quality control cost
(d) Administration cost

Ans: (b)

5. **Depreciation of director's laptop is treated as a part of:** ***(SM)***

(a) Administration Overheads
(b) Factory Overheads
(c) Direct Expenses
(d) Research & Development cost.

Ans: (a)

6. **A manufacture has set-up a lab for testing of products for compliance with standards, salary of this lab staffs are part of:** ***(SM)***

(a) Works overheads
(b) Quality Control Cost
(c) Direct Expenses
(d) Research & Development Cost.

Ans: (b)

7. **Audit fees paid to auditors is part of:** ***(SM)***

(a) Administration Cost
(b) Production cost
(c) Selling & Distribution cost
(d) Not shown in cost sheet.

Ans: (a)

8. **Salary paid to factory store staff is part of:** ***(SM)***

(a) Factory overheads
(b) Production Cost
(c) Direct Employee cost
(d) Direct Material Cost.

Ans: (a)

9. **Canteen expenses for factory workers are part of:** ***(SM)***

(a) Factory overhead
(b) Administration Cost
(c) Marketing cost
(d) None of the above

Ans: (a)

10. **A company pays royalty to State Government on the basis of production, it is treated as:** ***(SM)***

(a) Direct Material Cost
(b) Factory Overheads
(c) Direct Expenses
(d) Administration cost.

Ans: (c)

11. What would be Prime cost from below information?

Direct materials Purchased	:	₹ 75,000
Direct labour	:	₹ 45,000
Direct expenses	:	₹ 15,000
Manufacturing overheads	:	₹ 22,500
Direct materials consumed	:	₹ 67,500

(a) ₹ 1,35,000
(b) ₹ 1,27,500
(c) ₹ 1,57,500
(d) ₹ 1,50,000 *(MTP 2 Marks Apr'24)*

Ans : (b)

12. Following information is available for the month of March relating to manufacturing of a product:

Particulars	Amount (₹)
Cost of Sales	37,51,540
Stock of Raw material as on 01st March	6,50,000
Direct Wages	11,44,000
Hire charges paid for Plant (indirect expenses)	3,24,740
Salary to office staff	1,78,750
Maintenance of office building	13,000
Depreciation on Delivery van	39,000
Warehousing charges	61,750
Stock of Raw material as on 31st March	1,95,000
Realisable value on sale of scrap	32,500

Factory overheads are 20% of the Prime cost.

FIND OUT the value of Raw Material purchased with the help of Statement of Cost. *(RTP Jan'25)*

(a) ₹ 10,40,000
(b) ₹ 14,95,000
(c) ₹ 26,39,000
(d) ₹ 34,91,540

Ans: (a)

CHAPTER 7: COST ACCOUNTING SYSTEM

CONCEPTS OF THIS CHAPTER

- Cost Accounting System: overview.
- Difference: Integral vs Non-Integral system.
- Ledgers maintained in both systems.
- Reasons for profit differences in Financial and Cost Accounting.
- Prepare reconciliation statement for profit differences.
- Accounting for Management Information and Cost Control.

LDR Questions
Q 9
Q 33
Q 35

QUICK REVIEW OF IMPORTANT CONCEPTS

Non-integrated Accounting System

- SEPARATE LEDGERS are maintained for both Cost and Financial accounts.
- This system is also known as COST LEDGER ACCOUNTING SYSTEM.
- Items of Accounts Excluded Are Represented By Cost Ledger Control Account.

Integrated Accounting System

- COST AND FINANCIAL ACCOUNTS are kept in the SAME SET of books.
- PROVIDES RELEVANT INFORMATION necessary for preparing profit and loss account and the balance sheet.

Reconciliation of Cost and Financial Accounts

- Reconciliation is done when Cost and Financial accounts are kept separately
- Reconciliation of the balances of two sets of accounts is possible by preparing a MEMORANDUM RECONCILIATION ACCOUNT.

Causes of differences in Financial and Cost Accounts

Items included in Financial Accounts only

➢ **Purely Financial Expenses**

• Expenses and discounts on issue of shares	• Loss by fire not covered by insurance	
• Losses on the sales of Fixed assets	• Income tax, donations	• Interest on loans

➢ **Purely Financial Income**

• Interest received on bank deposits	• Rent receivables
• Dividends received	• Profits on the sale of fixed assets

Items included in Cost Accounts only (notional expenses)

• Charges in lieu of rent where premises are owned	• Notional Depreciation on the assets fully depreciated
• Interest on capital at notional figure though not incurred	• Salary for the proprietor at notional Figure

Items whose treatment is different in the two sets of accounts

➢ LIFO may be adopted for cost accounts

➢ Different method of depreciation may be followed

Varying basis of valuation

- Valuation of stock (at cost in cost accounting)

Procedure for Reconciliation

- Ascertainment of profit as per financial accounts
- Reconciliation of both the profits
- Ascertainment of profit as per cost accounts

Questions & Answers

Theory Questions

Question 1

WHEN is the reconciliation statement of Cost and Financial accounts not required?
(MTP 2 Marks Apr'24,SM)

Answer 1

When the Cost and Financial Accounts are integrated - there is no need to have a separate reconciliation statement between the two sets of accounts. Integration means that the same set of accounts fulfil the requirement of both i.e., Cost and Financial Accounts.

Question 2

LIST DOWN certain financial income included in Financial Accounts only. *(RTP Jan'25)*

Answer 2

Purely Financial Income

(i) Interest received on bank deposits, loans and investments
(ii) Dividends received
(iii) Profits on the sale of fixed assets and investments
(iv) Transfer fee received
(v) Rent receivables

Question 3

BRIEF OUT advantages of Integrated Accounts. *(MTP 5 Marks Apr'22, SM)*

Answer 3

Advantages of Integrated Accounts are as follows:

(i) **No need for Reconciliation**- The Question of reconciling costing profit and financial profit does not arise, as there is only one figure of profit.
(ii) **Less efforts**- Due to use of one set of books, there is a significant saving in efforts made.
(iii) **Less time consuming**- No delay is caused in obtaining information as it is provided from books of original entry.
(iv) **Economical process**- It is economical also as it is based on the concept of "Centralization of Accounting function".

Question 4

LIST five financial expenses that causes differences in Financial and Cost Accounts.
(MTP 5 Marks, Oct'20, MTP 5 Marks Sep'22) (RTP Jan'25)

Answer 4

Financial expenses causing differences in Financial and Cost Accounts:

(i) Interest on loans or bank mortgages.
(ii) Expenses and discounts on issue of shares, debentures etc.
(iii) Other capital losses i.e., loss by fire not covered by insurance etc.
(iv) Losses on the sales of fixed assets and investments.
(v) Goodwill written off.
(vi) Preliminary expenses written off.
(vii) Income tax, donations, subscriptions.
(viii) Expenses of the company's share transfer office, if any.

Question 5

Indicate, for following items, whether to be shown in the Cost Accounts or Financial Accounts:

(i) **Preliminary expenses written off during the year**
(ii) **Interest received on bank deposits**
(iii) **Dividend, interest received on investments**
(iv) **Salary for the proprietor at notional figure though not incurred**
(v) **Charges in lieu of rent where premises are owned**
(vi) **Rent receivables**
(vii) **Loss on sale of Fixed Assets**
(viii) **Interest on capital at notional figure though not incurred**
(ix) **Goodwill written off**
(x) **Notional Depreciation on the assets fully depreciated for which book value is Nil.**

(PYP 5 Marks Nov'22)

Answer 5

Sr. No.	Items	Accounts
(i)	Preliminary expenses written off during the year	Financial Accounts
(ii)	Interest received on bank deposits	Financial Accounts
(iii)	Dividend, interest received on investments	Financial Accounts
(iv)	Salary for the proprietor at notional figure though not incurred	Cost Accounts
(v)	Charges in lieu of rent where premises are owned	Cost Accounts
(vi)	Rent receivables	Financial Accounts
(vii)	Loss on the sales of Fixed Assets	Financial Accounts
(viii)	Interest on capital at notional figure though not incurred	Cost Accounts
(ix)	Goodwill written off	Financial Accounts
(x)	Notional Depreciation on the assets fully depreciated for which book value is nil	Cost Accounts

EXAM INSIGHTS: This theory question to indicate whether the given items to be shown in the Cost Accounts or Financial Accounts. Most of the items were indicated correctly by the examinees. Performance of the examinees was **good.**

Question 6

DISCUSS the essential features of a good cost accounting system?

(MTP 5 Marks Apr'24, MTP Oct'19, 5 Marks, SM)

Answer 6

The essential features, which a good Cost Accounting System should possess, are as follows:

(a) Informative and Simple: Cost Accounting System should be tailor- made, practical, simple and capable of meeting the requirements of a business concern. The system of costing should not sacrifice the utility by introducing meticulous and unnecessary details.

(b) Accuracy: The data to be used by the Cost Accounting System should be accurate; otherwise it may distort the output of the system and a wrong decision may be taken.

(c) Support from Management and subordinates: Necessary cooperation and participation of executives from various departments of the concern is essential for developing a good system of Cost Accounting.

(d) Cost-Benefit: The Cost of installing and operating the system should justify the results.

(e) Procedure: A carefully phased programme should be prepared by using network analysis for the introduction of the system.

(f) Trust: Management should have faith in the Costing System and should also provide a helping hand for its development and success.

Question 7

"Is reconciliation of cost accounts and financial accounts necessary in case of integrated accounting system?" EXPLAIN. ***(MTP 5 Marks, Mar'19, Mar'23, Apr'23 & Sep'23 RTP May'22 & May'24)***

Answer 7

In integrated accounting system cost and financial accounts are kept in the same set of books.

Such a system will have to afford full information required for Costing as well as for Financial Accounts. In other words, information and data should be recorded in such a way so as to enable the firm to ascertain the cost (together with the necessary analysis) of each product, job, process, operation or any other identifiable activity. It also ensures the ascertainment of marginal cost, variances, abnormal losses and gains. In fact, all information that management requires from a system of Costing for doing its work properly is made available. The integrated accounts give full information in such a manner so that the profit and loss account and the balance sheet can be prepared according to the requirements of law and the management maintains full control over the liabilities and assets of its business.

Since, only one set of books are kept for both cost accounting and financial accounting purpose so there is no necessity of reconciliation of cost and financial accounts.

Question 8

What are the important ledgers to be maintained under non-integrated accounting system in the Cost Accounting? *(MTP 4 Marks Mar'24)*

Answer 8

The important ledgers to be maintained under non-integrated accounting system in the Cost Accounting are the followings:

(a) **Cost Ledger** - This is the principle ledger of the cost department in which impersonal accounts are recorded. This ledger is made self- balancing by maintaining therein a Control Account for each subsidiary ledger.

(b) **Stores Ledger** - It contains an account for each item of stores. The entries in each account maintained in this ledger are made from the invoice, goods received note, material requisitions, material received note etc. Accounts in respect of each item of stores show receipt, issue and balance in physical as well as in monetary terms.

(c) **Work-in-Process Ledger** - This ledger is also known as job ledger, it contains accounts of unfinished jobs and processes. All material costs, wages and overheads for each job in process are posted to the respective job accounts in this ledger. The balance in a job account represents total balance of job/work-in-process, as shown by the job account.

(d) **Finished Goods Ledger** - It contains an account for each item of finished product manufactured or the completed job. If the finished product is transferred to stock, a credit entry is made in the work- in-process ledger and a corresponding debit entry is made in this ledger.

Question 9

LDR

WHAT are the essential pre-requisites for integrated accounts? *(MTP 4 Marks July'24) (PYP 5 Marks Nov'20, RTP May'23, SM May'22, MTP 5 Marks Mar'22)*

Answer 9

The essential pre-requisites for integrated accounts include the following steps:

1. The management's decision about the extent of integration of thetwo sets of books. Some concerns find it useful to integrate up to the stage of prime cost or factory cost while other prefers full integration of the entire accounting records.
2. A suitable coding system must be made available so as to servethe accounting purposes of financial and cost accounts.
3. An agreed routine, with regard to the treatment of provision foraccruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.
4. Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

   Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers' Ledger and the Purchase Ledger, there will be: (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

Question 10

Management of Tillu manufacturing co. is thinking of installing a costing system its company. What practical DIFFICULTIES management will expect and how management will OVERCOME the same?
(MTP 5 Marks Aug'24)

Answer 10

The Practical difficulties with which a Cost Accountant is usually confronted with while installing a costing system in a manufacturing company are as follows:

(i) Lack of top management support: Installation of a costing system does not receive the support of top management. They considerit as interference in their work. They believe that such, a system will involve additional paperwork. They also have amisconception in their minds that the system is meant for keepinga check on their activities.

(ii) Resistance from cost accounting departmental staff: The staff resist because of fear of loosing their jobs and importance afterthe implementation of the new system.

(iii) Non co-operation from user departments: The foremen, supervisor and other staff members may not cooperate in providing requisite data, as this would not only add to their responsibilities but will also increase paper work of the entire team as well.

(iv) Shortage of trained staff: Since cost accounting system's installation involves specialised work, there may be a shortage of trained staff.

To overcome these practical difficulties, necessary steps required are:

- Sell the idea to top management and convince them of the utilityof the system.
- Resistance and non co-operation can be overcome by behavioural approach. To deal with the staff concernedeffectively.
- Proper training should be given to the staff at each level
- Regular meetings should be held with the cost accounting staff,user departments, staff and top management to clarify their doubts/ misgivings.

Question 11

Why is it necessary to reconcile the Profits between the Cost Accounts and Financial Accounts?
(MTP 5 Marks Apr'24,SM)

Answer 11

When the cost and financial accounts are kept separately, It is imperative that these should be reconciled, otherwise the cost accounts would not be reliable. The reconciliation of two set of accounts can be made, if both the sets contain sufficient detail as would enable the causes of differences to be located. It is therefore, important that in the financial accounts, the expenses should be analyzed in the same way as in cost accounts. It is important to know the causes which generally give rise to differences in the costs & financial accounts. These are:

(i) Items included in financial accounts but not in cost accounts

- Income-tax
- Transfer to reserve
- Dividends paid
- Goodwill / preliminary expenses written off
- Pure financial items
- Interest, dividends
- Losses on sale of investments
- Expenses of Co's share transfer office
- Damages & penalties

(ii) Items included in cost accounts but not in financial accounts

- Opportunity cost of capital
- Notional rent

(iii) Under / Over absorption of expenses in cost accounts

(iv) Different bases of inventory valuation

Motivation for reconciliation is:

- To ensure reliability of cost data
- To ensure ascertainment of correct product cost
- To ensure correct decision making by the management based on Cost & Financial data
- To report fruitful financial / cost data.

Question 12

Answer any four of the following: Briefly explain the essential features of a good Cost Accounting System. ***(PYP 5 Marks May'22, RTP Nov'18, MTP 5 Marks Oct'22)***

Answer 12

(a) The essential features, which a good cost accounting system should possess, are as follows:

(a) **Informative and simple**: Cost accounting system should be tailor-made, practical, simple and capable of meeting the requirements of a business concern. The system of costing should not sacrifice the utility by introducing inaccurate and unnecessary details.

(b) **Accurate and authentic**: The data to be used by the cost accounting system should be accurate and authenticated; otherwise it may distort the output of the system and a wrong decision may be taken.

(c) **Uniformity and consistency**: There should be uniformity and consistency in classification, treatment and reporting of cost data and related information. This is required for benchmarking and comparability of the results of the system for both horizontal and vertical analysis.

(d) **Integrated and inclusive**: The cost accounting system should be integrated with other systems like financial accounting, taxation, statistics and operational research etc. to have a complete overview and clarity in results.

(e) **Flexible and adaptive**: The cost accounting system should be flexible enough to make necessary amendment and modifications in the system to incorporate changes in technological, reporting, regulatory and other requirements.

(f) **Trust on the system**: Management should have trust on the system and its output. For this, an active role of management is required for the development of such a system that reflects a strong conviction in using information for decision making.

EXAM INSIGHTS: This theory question on essential features of good cost accounting system was not answered well. Performance of the examinees was poor.

Question 13

As a consultant hired by a manufacturing company, HOW would you go about assessing the critical factors for designing and implementing a cost accounting system? ***(MTP 5 Marks Dec'24)***

Answer 13

Before installation of a system of cost accounting in a manufacturing organisation the under mentioned factors should be studied:

(a) Objective: The objective of costing system, for example whether it is being introduced for fixing prices or for insisting a system of cost control.

(b) Nature of Business or Industry: The Industry in which business is operating. Every business industry has its own peculiar feature and costing objectives. According to its cost information requirement cost accounting methods are followed. For example Indian Oil Corporation Ltd. has to maintain process wise cost accounts to find out cost incurred on a particular process say in crude refinement process etc.

(c) Organisational Hierarchy: Costing system should fulfill the requirement of different level of management. Top management is concerned with the corporate strategy, strategic level management is concerned with marketing strategy, product diversification, product pricing etc. Operational level management needs the information on standard quantity to be consumed, report on idle time etc.

(d) Knowing the product: Nature of product determines the type of costing system to be implemented. The

product which has by- products requires costing system which account for by-products as well. In case of perishable or short self- life, marginal costing method is required to know the contribution and minimum price at which it can be sold.

(e) **Knowing the production process:** A good costing system can never be established without the complete knowledge of the production process. Cost apportionment can be done on the most appropriate and scientific basis if a cost accountant can identify degree of effort or resources consumed in a particular process. This also includes some basic technical know-how and process peculiarity.

(f) **Information synchronisation:** Establishment of a department or a system requires substantial amount of organisational resources. While drafting a costing system, information needs of various other departments should be taken into account. For example in a typical business organisation accounts department needs to submit monthly stock statement to its lender bank, quantity wise stock details at the time filing returns to tax authorities etc.

(g) **Method of maintenance of cost records:** The manner in which Cost and Financial accounts could be inter-locked into a single integral accounting system and in which results of separate sets of accounts, cost and financial, could be reconciled by means of control accounts.

(h) **Statutory compliances and audit**: Records are to be maintained to comply with statutory requirements, standards to be followed (Cost Accounting Standards and Accounting Standards).

(i) **Information Attributes**: Information generated from the Costing system should be possess all the attributes of an information i.e. complete, accurate, timeliness, confidentiality etc. This also meets the requirements of management information system.

Practical Questions

Question 14

Following information is available as per the cost accounts of a company for the year ended 31st March:

Particulars	Amount (₹)
Profit	7,77,150
Factory expenses under-charged	2,35,500
Administrative expenses under-charged	1,17,750
Selling & distribution expenses under-charged	31,400
Income from interest and dividends (not adjusted in cost statement)	2,35,500

You are required to PREPARE a reconciliation statement to ascertain Profit as per Financial Accounts
(MTP 4 Marks Dec'24)

Answer 14

Statement of Reconciliation
(to ascertain Profit as per Financial Accounts)

Particulars	(₹)	(₹)
Profit as per Cost Account		7,77,150
Add: Income from interest and dividends		2,35,500
		10,12,650
Less: Factory expenses under-charged in Cost Accounts	2,35,500	
Administrative expenses under-charged in Cost Accounts	1,17,750	
Selling & distribution expenses under- charged in Cost Accounts	31,400	(3,84,650)
Profit as per Financial Accounts		**6,28,000**

Question 15

Following information is extracted as a result of scrutiny of the figures from both the financial accounts and cost accounts of CK Ltd. for the year ending 31st March:

Particulars	Amount (₹)
Net Profit (as per cost accounts)	57,71,840
Under recovery of selling overheads in cost accounts	1,16,800
Under valuation of closing stock in cost accounts	1,64,000
Rent received credited in financial accounts	87,200
Bad debts provided in financial accounts	52,000
Income tax provided in financial accounts	2,54,400
Under recovery of administration overheads in cost accounts	1,50,400

You are required to PREPARE a Statement of Reconciliation showing the profit as per financial records.
(RTP Jan'25)

Answer 15

Statement of Reconciliation

(Reconciling the profit as per costing records with the profit as perfinancial records)

Particulars	**(₹)**	**(₹)**
Net Profit as per Cost Accounts		57,71,840
Add: Under valuation of closing stock incost accounts	1,64,000	
Rent received credited in financial accounts	87,200	2,51,200
		60,23,040
Less: Under recovery of sellingover heads in cost accounts	1,16,800	
Bad debts provided in financial accounts	52,000	
Income tax provided in financial accounts	2,54,400	
Under recovery of administration over heads in cost accounts	1,50,400	5,73,600
Profit as per Financial Accounts		**54,49,440**

Question 16

R Ltd. showed a Net Profit of ₹ 3,60,740 as per their cost accounts for the year ended 31st March, 2021. The following information was revealed as a result of scrutiny of the figures from the both sets of accounts:

Sr. No.	Particulars	(₹)
i.	Over recovery of selling overheads in cost accounts	10,250
ii.	Over valuation of closing stock in cost accounts	7,300
iii.	Rent received credited in financial accounts	5,450
iv.	Bad debts provided in financial accounts	3,250
v.	Income tax provided in financial accounts	15,900
vi.	Loss on sale of capital asset debited in financial accounts	5,800
vii.	Under recovery of administration overheads in cost accounts	3,600

Required: Prepare a reconciliation statement showing the profit as per financial records.
(PYP 5 Marks Dec'21)

Answer 16

Statement of Reconciliation

(Reconciling the profit as per costing records with the profit as per financial records)

	(₹)	(₹)
Net Profit as per Cost Accounts		3,60,740
Add:		
Over recovery of selling overheads in cost accounts	10,250	
Rent received credited in financial accounts	5,450	15,700
		376,440
Less:		
Over valuation of closing stock in cost accounts	7,300	
Bad debts provided in financial accounts	3,250	

Income tax provided in financial accounts	15,900	
Loss on sale of capital asset debited in financial accounts	5,800	
Under recovery of administration overheads in cost accounts	3,600	35,850
Profit as per Financial Accounts		3,40,590

EXAM INSIGHTS: Question was on preparation of reconciliation statement to calculate the profit as per financial records. This sub part can be considered as an easy one and most of the examinees attempted in the correct line. Performance of the examinees was good.

Question 17

XYZ Ltd. declared a net profit of ₹ 2,25,000 based on their financial accounts for the year ending 31st March, 2024. The profit disclosed in cost books are not matched with financial accounts. The following information were revealed during the scrutiny of the figures of both the sets of books:

Sr. No.	Particulars	₹
1.	Preliminary expenses written off in financial accounts	35,000
2.	Factory Overheads Over charged in cost accounts	20,000
3.	Expenses on issue of shares in financial accounts	30,000
4.	Undervaluation of closing stock in cost accounts	65,000
5.	Interest on Bank Deposits in financial accounts	60,000
6.	Under recovery of administration overheads in cost accounts	25,000
7.	Notional Rent of own premises charged in cost accounts	30,000
8.	Under recovery of selling overheads in cost accounts	35,000
9.	Bad debts recovered in financial accounts	50,000

Required:

Prepare Reconciliation Statement to arrive at net profit/loss as per Cost Accounts. ***(PYP 5 Marks Sep'24)***

Answer 17

Reconciliation Statement

	(₹)	(₹)
Profit (loss) as per Financial Accounts		2,25,000
Add:		
Preliminary expenses written off	35,000	
Expenses on issue of shares in financial accounts	30,000	
Under recovery of administration overheads incost accounts	25,000	
Under recovery of selling overheads in costaccounts	35,000	
Less:		1,25,000
Factory Overheads Over charged in cost accounts	20,000	
Undervaluation of closing stock in cost accounts	65,000	
Interest on Bank Deposits	60,000	
Notional Rent of own premises charged in costaccounts	30,000	
Bad debts recovered in financial accounts	50,000	
		(2,25,000)
Net Profit as per Cost Accounts		**1,25,000**

Question 18

Journalize the following transactions assuming the cost and financial accounts are integrated:

Particulars	Amount (₹)
Direct Materials issued to production	₹ 5,88,000
Allocation of Wages (Indirect)	₹ 7,50,000

Factory Overheads (Over absorbed)	₹ 2,25,000
Administrative Overheads (Under absorbed)	₹ 1,55,000
Deficiency found in stock of Raw material (Normal)	₹ 2,00,000

(PYP 5 Marks May'22)

Answer 18

Particulars		(₹)	(₹)
(i) Work-in-Progress Ledger Control A/c	Dr.	5,88,000	
To Stores Ledger Control A/c (Being issue of direct materials to production)			5,88,000
(ii) Factory Overhead control A/c	Dr.	7,50,000	
To Wages Control A/c (Being allocation of Indirect wages)			7,50,000
(iii) Factory Overhead Control A/c	Dr.	2,25,000	
To Costing Profit & Loss A/c (Being transfer of over absorption of Factory overhead)			2,25,000
(iv) Costing Profit & Loss A/c	Dr.	1,55,000	
To Administration Overhead Control A/c (Being transfer of under absorption of Administration overhead)			1,55,000
(v) Factory Overhead Control A/c	Dr.	2,00,000	
To Stores Ledger Control A/c (Being transfer of deficiency in stock of raw material)			2,00,000

(Note: Costing P/&/L = P/&/L and SLC = MLC)

EXAM INSIGHTS: This question was based on journal entry of the transactions when cost and financial accounts are integrated. Most of examinees recorded proper journal entry only for 2 transactions out of 5 transactions. Performance of the examinees was below average.

Question 19

Construct journal entries in the following situations assuming that cost and financial transactions are integrated:

(i) **Purchase of raw material** ₹ 4,40,000
(ii) **Direct Material issued to production** ₹ 3,60,000
(iii) **Wages charged to production** ₹ 80,000
(iv) **Manufacturing overheads charged to production** ₹ 1,32,000 *(PYP 4 Marks Nov'23)*

Answer 19

Journal entries are as follows

		DR. (₹)	Cr. (₹)
Stores Ledger Control A/c To Payables (Creditors)/ Bank A/c (Materials purchased)	Dr.	4,40,000	4,40,000
Work-in-Process Control A/c To Stores Ledger Control A/c (Materials issued to production)	Dr.	3,60,000	3,60,000
Work-in-Process Control A/c To Wages Control A/c (Direct wages charged to production)	Dr.	80,000	80,000
Work-in-Process Control A/c To Factory Overhead Control A/c (Manufacturing overhead charged to production)	Dr.	1,32,000	1,32,000

EXAM INSIGHTS: Question requiring construction of journal entries in the given situations assuming that cost and financial transactions are integrated. Most of the examinees could not construct all the entries correctly. Overall performance of the examinees was average.

Question 20

The financial records of Riva Private Limited showed a net profit of ₹ 1,69,500 for the year ended 31st March, 2022. The cost accounts, however, disclosed a net loss of ₹ 88,500 for the same period. The following information were revealed as a result of scrutiny of the figures of cost accounts and financial accounts:

		(₹)
(i)	(Administrative overhead under recovered	63,750.0
(ii)	Factory overhead over recovered	3,37,500.0
(iii)	Depreciation under charged in Cost Accounts	65,000.0
(iv)	Dividend received	50,000.0
(v)	Loss due to obsolescence charged in Financial Accounts	42,000.0
(vi)	Income tax provided	1,09,000.0
(vii)	Bank interest credited in Financial Accounts	34,000.0
(viii)	Value of opening stock:	
	In Cost Accounts	4,12,500.0
	In Financial Accounts	3,62,500.0
(ix)	Value of closing stock:	
	In Cost Accounts	3,13,750.0
	In Financial Accounts	3,30,000.0
(x)	Goodwill written-off in Financial Accounts	62,500.0
(xi)	Notional rent of own premises charged in Cost Accounts	1,50,000.0
(xii)	Provision for doubtful debts in Financial Accounts	37,500.0

Prepare a reconciliation statement by taking costing net loss as base.

(RTP May'23) (Same concept different figures MTP Apr'19, 10 Marks)

Answer 20

Statement of Reconciliation

Sl. No.	Particulars	(₹)	(₹)
	Net loss as per Cost Accounts		(88,500)
	Additions		
1	Factory O/H over recovered	3,37,500	
2	Dividend Received	50,000	
3	Bank Interest received	34,000	
4	Difference in Value of Opening Stock	50,000	
	(4,12,500 – 3,62,500)		
5	Difference in Value of Closing Stock	16,250	
	(3,30,000 – 3,13,7500)		
6	Notional Rent of own Premises	1,50,000	6,37,750
	Deductions		
1	Administration O/H under recovered	63,750	
2	Depreciation under charged	65,000	
3	Loss due to obsolescence	42,000	
4	Income tax Provided	1,09,000	
5	Goodwill written-off	62,500	
6	Provision for doubtful debts	37,500	(3,79,750)
	Net Profit as per Financial A/c.		1,69,500

Question 21

Journalise the following transactions, in cost books under Non- Integrated system of Accounting.

(i)	**Credit Purchase of Material**	**Rs. 27,000**
(ii)	**Manufacturing overhead charged to Production**	**Rs. 6,000**
(iii)	**Selling and Distribution overheads recovered from Sales**	**Rs. 4,000**
(iv)	**Indirect wages incurred**	**Rs. 8,000**
(v)	**Material returned from production to stores**	**Rs. 9,000**

(PYP Nov'19,5 Marks, MTP 5 Marks, Oct'21)

Answer 21

Journal entries are as follows:

			Dr.	Cr.
			(Rs.)	(Rs.)
	(i) Stores Ledger Control A/c.....	Dr.	27,000	
	To Cost Ledger Control A/c			27,000
	(ii) Work-in-Process Control A/c.....	Dr.	6,000	
	To Manufacturing Overhead Control A/c			6,000
	(iii) Cost of Sales A/c.....	Dr.	4,000	
	To Selling & Dist. Overhead Control A/c			4,000
	(iv) (1) Wage Control A/c.....	Dr.	8,000	
	To Cost Ledger Control A/c			8,000
	(2) Manufacturing Overhead Control A/c.....	Dr.	8,000	
	To Wages Control A/c			8,000
	OR			
	Manufacturing Overhead Control A/c.....	Dr.	8,000	
	To Cost Ledger Control A/c			8,000
	(v) Stores Ledger Control A/c	Dr.	9,000	
	To Work-in-Process Control A/c			9,000

*Cost Ledger Control A/c is also known as General Ledger Control A/c

EXAM INSIGHTS: This was a theoretical question based on Non-Integrated system of accounting. Average performance was observed by the examinees.

Question 22

X Ltd. follows Non-Integrated Accounting System. Financial Accounts of the company show a Net Profit of ₹ 5,50,000 for the year ended 31st March, 2022. The chief accountant of the company has provided following information from the Financial Accounts and Cost Accounts:

Sr. No	Particulars	(₹)
(i)	Legal Chargers Provided in Financial accounts	15,250
(ii)	Interim Dividend received credited in financial accounts	4,50,000
(iii)	Preliminary Expenses written off in financial accounts	25,750
(iv)	Over recovery of selling overheads in cost accounts	11,380
(v)	Profit on sale of capital asset credited in financial accounts	30,000
(vi)	Under valuation of closing stock in cost accounts	25,000
(vii)	Over recovery of production overheads in cost accounts	10,200
(viii)	Interest paid on Debentures shown in financial accounts	50,000

Required:

Find out the Profit (Loss) as per Cost Accounts by preparing a Reconciliation Statement.

(PYP 5 Marks Nov'22)

Answer 22

Reconciliation Statement

(Reconciliation the profit as per financial records with the profit as per costing records)

	Particulars	(₹)	Total (₹)
	Profit as per Financial Accounts		5,50,000
Add:	Legal Charges	15,250	
	Preliminary expenses written off	25,750	
	Interest paid	50,000	91,000
			6,41,000
Less:	Under-valuation of closing stock in cost book	25,000	
	Interim Dividend Received	4,50,000	
	Over recovery of selling overheads in cost accounts	11,380	
	Over recovery of production overhead in cost accounts	10,200	5,26,580
	Profit on sale of Assets	30,000	
	Profit as per Cost Accounts		1,14,420

EXAM INSIGHTS: This Numerical question was on preparation of reconciliation statement to calculate the profit as per Cost Accounts Performance of the examinees was **good.**

Question 23

A manufacturing company disclosed a net loss of Rs.3,47,000 as per their cost accounts for the year ended March 31,20X8. The financial accounts however disclosed a net loss of Rs. 5,10,000 for the same period. The following information was revealed because of scrutiny of the figures of both the sets of accounts.

	(Rs.)
(i) Factory Overheads under-absorbed	40,000
(ii) Administration Overheads over-absorbed	60,000
(iii) Depreciation charged in Financial Accounts	3,25,000
(iv) Depreciation charged in Cost Accounts	2,75,000
(v) Interest on investments not included in Cost Accounts	96,000
(vi) Income-tax provided	54,000
(vii) Interest on loan funds in Financial Accounts	2,45,000
(viii) Transfer fees (credit in financial books)	24,000
(ix) Stores adjustment (credit in financial books)	14,000
(x) Dividend received	32,000

PREPARE a memorandum Reconciliation Account.

(MTP Mar'19, 5 Marks, RTP Nov'20) (Same concept different figures MTP 5 Marks Mar'21, SM, MTP Oct'19 5 Marks)

Answer 23

Memorandum Reconciliation Accounts

Dr. **Cr.**

	(Rs.)		(Rs.)
To Net Loss as per Costing books	3,47,000	By Administration overheads over Recovered in cost accounts	60,000
To Factory overheads under absorbed in Cost Accounts	40,000	By Interest on investment not included in Cost Accounts	96,000
To Depreciation under charged in Cost Accounts	50,000	By Transfer fees in Financial books	24,000
To Income- Tax not provided in Cost Accounts	54,000	By Stores adjustment (Credit in financial books)	14,000

To Interest on Loan Funds in Financial Accounts	2,45,000	By Dividend received in financial books	32,000
		By Net loss as per Financial books	5,10,000
	7,36,000		7,36,000

Question 24

A manufacturing company disclosed a net profit ₹10,20,000 as per their cost accounts for the year ended 31st March, 2023. The financial accounts however disclosed a net profit of ₹ 6,94,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts.

	(₹)
(i) Factory Overheads under-absorbed	80,000
(ii) Administration Overheads over-absorbed	1,20,000
(iii) Depreciation charged in Financial Accounts	6,50,000
(iv) Depreciation charged in Cost Accounts	5,50,000
(v) Interest on investments not included in Cost Accounts	1,92,000
(vi) Income-tax provided	1,08,000
(vii) Interest on loan funds in Financial Accounts	4,90,000
(viii) Transfer fees (credit in financial books)	48,000
(ix) Stores adjustment (credit in financial books)	28,000
(x) Dividend received	64,000

PREPARE a Reconciliation statement. ***(MTP 5 Marks Apr'23, Mar'21 & Mar'19)***

Answer 24

Statement of Reconciliation

Particulars	Amount (₹)	Amount (₹)
Net profit as per Cost accounts		10,20,000
Add:		
Administration Overheads over-absorbed	1,20,000	
Interest on investments	1,92,000	
Transfer fees	48,000	
Stores adjustment	28,000	
Dividend received	64,000	4,52,000
Less:		
Factory Overheads under-absorbed	80,000	
Depreciation under charged	1,00,000	
Income-tax provided	1,08,000	
Interest on loan funds	4,90,000	(7,78,000)
Net profit as per Financial accounts		6,94,000

Question 25

A manufacturing company has disclosed net loss of ₹ 48,700 as per their cost accounting records for the year ended 31st March, 2024. However their financial accounting records disclosed net profit of ₹ 30,400 for the same period. A scrutiny of data of both the sets of books of accounts revealed the following informations:

		₹
(i)	Factory overheads under absorbed	30,500
(ii)	Administrative overheads over absorbed	65,000
(iii)	Depreciation charged in financial accounts	2,25,000
(iv)	Depreciation charged in cost accounts	2,70,000
(v)	Income-tax provision	52,400

(vi)	Transfer fee (credited in financial accounts)	10,200
(vii)	Obsolescence loss charged in financial accounts	20,700
(viii)	Notional rent of own premises charged in cost accounts	49,000
(ix)	Value of opening stock:	
(a)	in cost accounts	1,38,000
(b)	in financial accounts	1,15,000
(x)	Value of closing stock:	
(a)	in cost accounts	1,22,000
(b)	in financial accounts	1,12,500

PREPARE a Memorandum Reconciliation Account by taking costing loss as base. ***(MTP 5 Marks July'24)***

Answer 25

Memorandum Reconciliation Accounts

Dr. **Cr.**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Net Loss as per Cost Accounts	48,700	By Administration overheads over recovered in Cost Accounts	65,000
To Factory overheads under absorbed in Cost Accounts	30,500	By Depreciation overcharged in Cost Accounts (₹ 2,70,000 –₹ 2,25,000)	45,000
To Provision for Income tax	52,400	By Transfer fees in Financial Accounts	10,200
To Obsolescence loss	20,700	By Notional Rent of own premises	49,000
To Overvaluation of closing stock in Cost Accounts**	9,500	By Overvaluation of Opening stock in Cost Accounts*	23,000
To Net Profit (as per Financial Accounts)	30,400		
	1,92,200		1,92,200

* Overvaluation of Opening Stock as per Cost Accounts
= Value in Cost Accounts – Value in Financial Accounts
= ₹ 1,38,000 – ₹ 1,15,000 = ₹ 23,000.
** Overvaluation of Closing Stock as per Cost Accounts
= Value in Cost Accounts – Value in Financial Accounts
= ₹ 1,22,000 – ₹ 1,12,500 = ₹ 9,500.

Question 26

A manufacturing company disclosed a net loss of ₹ 3,47,000 as per their cost accounts for the year ended March 31,2024. The financial accounts however disclosed a net loss of ₹ 5,10,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts.

	(₹)
(i) Factory Overheads under-absorbed	40,000
(ii) Administration Overheads over-absorbed	60,000
(iii) Depreciation charged in Financial Accounts	3,25,000
(iv) Depreciation charged in Cost Accounts	2,75,000
(v) Interest on investments not included in Cost Accounts	96,000
(vi) Income-tax provided	54,000
(vii) Interest on loan funds in Financial Accounts	2,45,000
(viii) Transfer fees (credit in financial books)	24,000
(ix) Stores adjustment (credit in financial books)	14,000
(x) Dividend received	32,000

PREPARE a memorandum Reconciliation Account *(RTP Sep'24,SM)*

Answer 26

Memorandum Reconciliation Accounts

Dr. Cr.

		(₹)			(₹)
To	Net Loss as per Costing books	3,47,000	By	Administration overheads over recovered in cost accounts	60,000
To	Factory overheads under absorbed in Cost Accounts	40,000	By	Interest on investment not included in Cost Accounts	96,000
To	Depreciation under charged in Cost Accounts	50,000	By	Transfer fees in financial books	24,000
To	Income-Tax not provided in Cost Accounts	54,000	By	Stores adjustment (Credit in financial books)	14,000
To	Interest on Loan Funds in Financial Accounts	2,45,000	By	Dividend received in financial books	32,000
			By	Net loss as per financial books	5,10,000
		7,36,000			7,36,000

Question 27

S.K. Manufacturing Co. Ltd. showed a net profit of ₹ 5,40,400 as per their cost accounts for the year ended 31.03.2004. However, the financial books disclosed a net profit of ₹ 2,60,500 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of books:

	₹
Factory overheads under absorbed	84,800
Administrative overheads over absorbed	24,000
Interest paid on bank borrowings	50,000
Interest & Divided received	65,200
Notional rent of own premises charged in cost accounts	60,000
Losses on the sales of fixed assets and investments	48,000
Donations and subscriptions	18,800
Overvaluation of closing stock of finished goods in Cost accounts	1,25,000
Store adjustments (credited in financial books)	7,500
Depreciation over charged in cost accounts	40,000
Income tax provided	1,50,000

You are required to:

(i) Prepare a reconciliation statement taking net profit as per cost accounts as base.

(ii) State when is the reconciliation statement of Cost and Financial accounts not required?

(PYP 7 Marks May '24)

Answer 27

(i) Statement of Reconciliation of profit as obtained under Cost and Financial Accounts

		(₹)	(₹)
	Profit as per Cost Records		**5,40,400**
Add:	Administrative Overhead over absorbed	24,000	
	Interest & Dividend Received	65,200	
	Notional rent of own premises	60,000	
	Stores adjustments (credited in financial books)	7,500	
	Depreciation over charged in cost accounts	40,000	1,96,700
			7,37,100
Less:	Factory overheads under absorbed	84,800	
	Interest paid on bank borrowings	50,000	

	Losses on sale of fixed assets and investments	48,000	
	Donations and subscriptions	18,800	
	Over-valuation of closing stock of finished goods in cost accounts	1,25,000	
	Income tax	1,50,000	(4,76,600)
	Profit as per Financial Records		**2,60,500**

(ii) Circumstances where reconciliation statement can be avoided:

When the Cost and Financial Accounts are integrated - there is no need to have a separate reconciliation statement between the two sets of accounts. Integration means that the same set of accounts fulfil the requirement of both i.e., Cost and Financial Accounts.

Question 28

(Also includes concepts of Cost Sheet)

The Profit and Loss account of ABC Ltd. for the year ended 31st March, 2021 is given below:

Profit and Loss account

(for the year ended 31st March, 2021)

To Direct Material	6,50,000	By Sales (15000 units)	15,00,000
To Direct Wages	3,50,000	By Dividend received	9,000
To Factory overheads	2,60,000		
To Administrative overheads	1,05,000		
To Selling overheads	85,000		
To Loss on sale of investments	2,000		
To Net Profit	57,000		
	15,09,000		15,09,000

- Factory overheads are 50% fixed and 50% variable.
- Administrative overheads are 100% fixed.
- Selling overheads are completely variable.
- Normal production capacity of ABC Ltd. is 20,000 units.
- Indirect Expenses are absorbed in the cost accounts on the basis of normal production capacity.
- Notional rent of own premises charged in Cost Accounts is amounting to ₹ 12,000.

You are required to:

(i) Prepare a Cost Sheet and ascertain the Profit as per Cost Records for the year ended 31st March, 2021.

(ii) Reconcile the Profit as per Financial Records with Profit as per Cost Records. *(PYP 10 Marks Jul'21)*

Answer 28

(i) Cost Sheet

(for the year ended 31st March, 2021)

	(₹)	(₹)
Direct material		6,50,000
Direct wages		3,50,000
Prime cost		**10,00,000**
Factory Overheads:		
Variable (50% of ₹ 2,60,000)	1,30,000	
Fixed (₹ 1,30,000 × 15,000/20,000)	97,500	2,27,500
Works cost		**12,27,500**
Administrative Overheads (₹ 1,05,000 × 15,000/20,000)		78,750
Notional Rent		12,000
Cost of production		**13,18,250**
Selling Overheads		85,000
Cost of Sales		**14,03,250**
Profit (Balancing figure)		96,750
Sales revenue		**15,00,000**

(ii) Statement of Reconciliation

(Reconciling profit shown by Financial and Cost Accounts)

	(₹)	(₹)
Profit as per Cost Account		96,750
Add: Dividend received	9,000	
Add: Notional Rent	12,000	21,000
Less: Factory Overheads under-charged in Cost Accounts (₹ 2,60,000 – ₹ 2,27,500)	32,500	
Less: Administrative expenses under-charged in Cost Accounts (₹ 1,05,000 – ₹ 78,750)	26,250	
Less: Loss on sale of Investments	2,000	(60,750)
Profit as per Financial Accounts		**57,000**

(Note: Solution can be done considering base profit as per Financial Accounts)

EXAM INSIGHTS: It was a practical problem requiring preparation of cost sheet and reconciling profit as per financial records with profit as per cost records. In the preparation of the cost sheet, examinees faced problems in the identification of absorbed indirect expenses on the basis of normal production capacity. Performance of the examinees was below average.

Question 29

The following information have been extracted from the cost records of a manufacturing company:

		(₹)
	Stores	
*	**Opening balance**	**9,000**
*	**Purchases**	**48,000**
*	**Transfer from WIP**	**24,000**
*	**Issue to work-in-progress**	**48,000**
*	**Issue for repairs**	**6,000**
*	**Deficiency found in stock**	**1,800**
	Work-in-Progress:	
*	**Opening balance**	**18,000**
*	**Direct Wages applied**	**18,000**
*	**Overhead charged**	**72,000**
*	**Closing balance**	**12,000**
	Finished Production :	
*	**Entire production is sold at a profit of 10% on cost from work-in-progress**	
*	**Wages paid.**	**21,000**
*	**Overhead incurred**	**75,000**

DRAW the Stores Leger Control A/c, Work-in-Progress Control A/c, Overheads Control A/c and Costing Profit and Loss A/c. ***(MTP 5 Marks Nov'24)***

Answer 29

Stores Ledger Control A/c

Particulars	(₹)	Particulars	(₹)
To Balance b/d	9,000	By Work in Process	48,000
To General Ledger Adjustment A/c	48,000	By Overhead Control A/c	6,000
To Work in Process A/c	24,000	By Overhead Control A/c (Deficiency)	1,800*
		By Balance c/d	25,200
	81,000		81,000

*Deficiency assumed as normal (alternatively can be treated asabnormal loss)

Work in Progress Control A/c

Particulars	(₹)	Particulars	(₹)
To Balance b/d	18,000	By Stores Ledger Control a/c	24,000

To Stores Ledger Control A/c	48,000	By Costing P/L A/c (Balancing figures being cost of finished goods)	1,20,000
To Wages Control A/c	18,000	By Balance c/d	12,000
To Overheads Control a/c	72,000		
	1,56,000		1,56,000

Overheads Control A/c

Particulars	(₹)	Particulars	(₹)
To Stores Ledger Control A/c	6,000	By Work in Process A/c	72,000
To Stores Ledger Control A/c	1,800	By Balance c/d (Underabsorption)	13,800
To Wages Control A/c (₹ 21,000- ₹18,000)	3,000		
To Gen. Ledger Adjust. A/c	75,000		
	85,800		85,800

Costing Profit & Loss A/c

Particulars	(₹)	Particulars	(₹)
To Work in progress	1,20,000	By Gen. ledger Adjust. A/c (Sales) (1,20,000 + 12,000)	1,32,000
To Gen. Ledger Adjust. A/c (Profit)	12,000		
	1,32,000		1,32,000

Question 30

The following figures have been taken from the financial accounts of a manufacturing firm for the year ended 31st March, 2021:

	(Rs.)
Direct material consumption	20,00,000
Direct wages	12,00,000
Factory overheads	6,40,000
Administrative overheads	2,80,000
Selling and distribution overheads	3,84,000
Bad debts	32,000
Preliminary expenses written off	16,000
Legal charges	4,000
Dividend received	40,000
Interest on fixed deposit	8,000
Sales - 48,000 units	48,00,000
Closing stock:	
- Finished stock - 4,000 units	3,20,000
- Work-in-process	96,000

The cost accounts for the same period reveal that the Direct Material consumption was Rs. 22,40,000; Factory overhead is recovered at 20% on prime cost; Administration overhead is recovered @ Rs. 4.8 per unit of production; and Selling and Distribution overheads are recovered at Rs. 6.40 per unit sold.

Required:

PREPARE Costing and Financial Profit & Loss Accounts and RECONCILE the difference in the profit as arrived at in the two sets of accounts. ***(MTP 10 Marks, Apr'21) (Same concept different figures SM)***

Answer 30

Costing Profit and Loss Account

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
To Direct Material consumed	22,40,000	By Sales	48,00,000
To Direct Wages	12,00,000	By Closing Work-in-process	96,000

Prime Cost	34,40,000	By Closing Finished stock $\left(\frac{Rs.\,41,28,000 - Rs.\,96,000}{52,000\ units} \times 4,000\right)$	3,10,154
To Factory overheads (20% of prime cost)	6,88,000		
	41,28,000		
To Administrative overheads (Rs. 4.80 × 52,000* units)	2,49,600		
To Selling & distribution overheads (Rs.6.40 × 48,000 units)	3,07,200		
To Net profit (balancing figure)	5,21,354		
	52,06,154		52,06,154

* Units produced = Units sold + Closing stock - Opening stock
= 48,000 + 4,000 - 0 = 52,000 units

Financial Profit and Loss Account

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
To Direct Material consumed	20,00,000	By Sales	48,00,000
To Direct Wages	12,00,000	By Dividend received	40,000
To Factory overheads	6,40,000	By Interest on fixed deposit	8,000
To Administrative overheads	2,80,000	By Closing Work-in-process	96,000
To Selling & distribution overheads	3,84,000	By Closing Finished stock	3,20,000
To Bad debts	32,000		
To Preliminary expenses	16,000		
To Legal charges	4,000		
To Net profit (balancing figure)	7,08,000		
	52,64,000		52,64,000

Reconciliation Statement

Particulars		Amount (Rs.)	Amount (Rs.)
	Net profit as per Financial Profit & Loss A/c		7,08,000
Add:	Administrative overheads (2,80,000 - 2,49,600)	30,400	
	Selling & Distribution overheads (3,84,000 - 3,07,200)	76,800	
	Bad debts	32,000	
	Preliminary expenses	16,000	
	Legal charges	4,000	1,59,200
			8,67,200
Less:	Difference in value of materials consumed (22,40,000 - 20,00,000)	2,40,000	
	Factory overheads (6,88,000 - 6,40,000)	48,000	
	Dividend received	40,000	
	Interest on fixed deposit	8,000	
	Closing stock (3,20,000 - 3,10,154)	9,846	(3,45,846)
	Profit as per Costing Profit & Loss A/c		5,21,354

Question 31

The financial books of a company reveal the following data for the yearended 31st March, 2024:

	(₹)
Opening Stock:	
Finished goods 545 units	**48,250**

Work-in-process	38,000
01.04.2023 to 31.03.2024	
Raw materials consumed	5,00,000
Direct Labour	4,20,000
Factory overheads	3,56,000
Administration overheads	2,10,000
Stores Adjustment debited in financial Account	50,000
Dividend paid	98,000
Bad Debts	16,000
Selling and Distribution Overheads	84,000
Income tax paid	34,000
Interest received	42,000
Sales 14,250 units	13,96,500
Closing Stock: Finished goods 460 units	44,500
Work-in-process	36,200

The cost records provide as under:

- Factory overheads are absorbed at 60% of direct wages.
- Administration overheads are recovered at 20% of factory cost.
- Selling and distribution overheads are charged at ₹6 per unit sold.
- Opening Stock of finished goods is valued at ₹90 per unit.
- The company values work-in-process at factory cost for both Financialand Cost Profit Reporting.

Required:

(i) Prepare statements for the year ended 31st March, 2024 show
- the profit as per financial records
- the profit as per costing records.

(ii) Present a statement reconciling the profit as per costing recordswith the profit as per Financial Records *(MTP 7 Marks Aug'24)*

Answer 31

(i) Statement of Profit as per financial records
(for the year ended March 31, 2024)

	(₹)		(₹)
To Opening stock ofFinished Goods	48,250	By Sales	13,96,500
To Work-in-process	38,000	By Closing stock offinished Goods	44,500
To Raw materialsconsumed	5,00,000	By Work-in-Process	36,200
To Direct labour	4,20,000	By Interest received	42,000
To Factory overheads	3,56,000	By Loss	3,35,050
To Administrationoverheads	2,10,000		
To Selling & distribution overheads	84,000		
To Dividend paid	98,000		
To Bad debts	16,000		
To Stores adjustment	50,000		
To Income tax	34,000		
	18,54,250		**18,54,250**

Statement of Profit as per costing records
(for the year ended March 31,2024)

	(₹)
Sales revenue (A) (14,250 units)	13,96,500
Cost of sales:	
Opening stock (545 units x ₹ 90)	49,050
Add: Cost of production of 14,165 units (Refer to working note 2)	14,08,560
Less: Closing stock (₹ 99.44 x 460 units)	45,742

Production cost of goods sold (14,250 units)	14,11,868
Selling & distribution overheads	
(14,250 units x ₹ 6)	85,500
Cost of sales: (B)	14,97,368
Profit/Loss: {(A) – (B)}	(1,00,868)

(ii) Statement of Reconciliation

(Reconciling the profit as per costing records with the profitas per financial records)

	(₹)	(₹)
Loss as per Cost Accounts		(1,00,868)
Add: Administration overheads over absorbed (₹ 2,34,760 – ₹ 2,10,000)	24,760	
Opening stock overvalued (₹ 49,050 – ₹ 48,250)	800	
Interest received	42,000	
Selling & distribution overheads over recovered(₹ 85,500 – ₹ 84,000)	1,500	69,060
		(31,808)
Less: Factory overheads over recovered (₹ 3,56,000 - ₹2,52,000)	1,04,000	
Closing stock overvalued(₹45,742 – ₹44,500)	1,242	
Stores adjustment	50,000	
Income tax	34,000	
Dividend	98,000	
Bad debts	16,000	(3,03,242)
Loss as per financial accounts		(3,35,050)

Working notes:

1. Number of units produced	
	Units
Sales	14,250
Add: Closing stock	460
Total	14,710
Less: Opening stock	545
Number of units produced	14,165

2. Cost Sheet	
	(₹)
Raw materials consumed	5,00,000
Direct labour	4,20,000
Prime cost	9,20,000
Factory overheads	2,52,000
(60% of direct wages)	
Factory cost	11,72,000
Add: Opening work-in-process	38,000
Less: Closing work-in-process	36,200
Factory cost of goods produced	11,73,800
Administration overheads	2,34,760
(20% of factory cost)	
Cost of production of 14,165 units (Refer to working note 1)	14,08,560
Cost of production per unit: $\frac{₹\ 14,08,560}{14,165}$	99.44

Question 32

The financial books of a company reveal the following data for the year ended 31st March, 2023:

	(₹)
Opening Stock:	

Finished goods 875 units	76,525
Work-in-process	33,000
01.04.2022 to 31.03.2023	
Raw materials consumed	7,84,000
Direct labour	4,65,000
Factory overheads	2,65,000
Goodwill written off	95,000
Administration overheads	3,15,000
Income tax paid	72,000
Bad debts	21,000
Selling and distribution overheads	65,000
Interest received	18,500
Rent received	72,000
Sales 14,500 units	20,80,000
Closing Stock: Finished goods 375 units	43,250
Work-in-process	48,200

The management of the company, for preparing cost sheet and variance analysis uses the following cost recovery basis which has been elaborated by the cost controller of the company:

Factory overheads are absorbed at 60% of direct wages.

Administration overheads (production related) are recovered at 20% of factory cost.

Selling and distribution overheads are charged at ₹ 5 per unit sold.Opening Stock of finished goods is valued at ₹105 per unit.

The company values work-in-process at factory cost for both financialand cost accounting purpose.

You being an associate to the cost controller of the company has beenasked to:

(i) PREPARE a statement of profit as per costing records and financialrecords.

(ii) CALCULATE cost of production per unit.

(iii) PREPARE a statement reconciling the profit as per costing recordswith the profit as per financial records. *(RTP May'24)*

Answer 32

Statement of Profit as per financial records
(for the year ended March 31, 2023)

	(₹)		(₹)
To Opening stock:		By Sales	20,80,000
Finished goods	76,525	By Closing stock:	
Work-in-process	33,000	Finished Goods	43,250
To Raw Materials consumed	7,84,000	Work-in-Process	48,200
To Direct labour	4,65,000	By Rent received	72,000
To Factory overheads	2,65,000	By Interest received	18,500
To Goodwill written off	95,000		
To Administration overheads	3,15,000		
To Selling & distribution overheads	65,000		
To Income tax paid	72,000		
To Bad debts	21,000		
To Profit	70,425		
	22,61,950		22,61,950

Statement of Profit as per costing records (for the year ended March 31,2023)

		(₹)	(₹)
Sales revenue (14,500 units)	(A)		20,80,000
Cost of Sales:			
Opening stock (875 units x ₹ 105)		91,875	
Add: Cost of production of 14,000 units (Refer to Working Note 1& 2)		18,15,360	
Less: Closing stock $\left(\frac{₹18,15,360 \times 375 \text{ units}}{14,000 \text{ units}}\right)$		(48,626)	

Production cost of goods sold (14,500 units)	18,58,609	
Selling & distribution overheads (14,500 units x ₹ 5)	72,500	
Cost of sales: (B)	19,31,109	19,31,109
Profit: {(A) – (B)}		1,48,891

Workings:

1. Number of units produced	Units
Sales	14,500
Add: Closing stock	375
Total	14,875
Less: Opening stock	875
Number of units produced	14,000

Cost Sheet

(₹)	(₹)
Raw materials consumed	7,84,000
Direct labour	4,65,000
Prime cost	12,49,000
Factory overheads (60% of direct wages)	2,79,000
Factory cost	15,28,000
Add: Opening work-in-process	33,000
Less: Closing work-in-process	(48,200)
Factory cost of goods produced	15,12,800
Administration overheads (20% of factory cost)	3,02,560
Cost of production of 14,000 units	18,15,360

Cost of production per unit:= $\frac{\text{Total Cost of Production}}{\text{No.of units produced}} = \frac{₹18,15,360}{14,000 \text{ units}} = ₹ 129.67$

Statement of Reconciliation

(Reconciling the profit as per costing records with the profit as per financial records)

	(₹)	(₹)
Profit as per Cost Accounts		1,48,891
Add: Factory overheads over absorbed (₹ 2,79,000 – ₹ 2,65,000)	14,000	
S & D overheads over absorbed (₹ 72,500 - ₹ 65,000)	7,500	
Opening stock overvalued (₹ 91,875 – ₹ 76,525)	15,350	
Interest received	18,500	
Rent received	72,000	1,27,350
		2,76,241
Less: Administration overheads under recovery (₹ 3,15000 – ₹ 3,02,560)	12,440	
Closing stock overvalued (₹ 48,626 – ₹ 43,250)	5,376	
Goodwill written off	95,000	
Income tax paid	72,000	
Bad debts	21,000	2,05,816
Profit as per financial accounts		70,425

Question 33

LDR

XYZ Ltd. maintains a non-integrated accounting system for the purpose of management information. The following are the data related with year 2020-21:

Particulars	Amount ('000)
Opening balances:	
- Stores ledger control A/c	48,000
- Work-in-process control A/c	12,000
- Finished goods control A/c	2,58,000
- Building construction A/c	6,000
- Cost ledger control A/c	3,24,000

During the year following transactions took place:	
Materials:	
- Purchased	24,000
- Issued to production	30,000
- Issued to general maintenance	3,600
- Issued to building construction	2,400
Wages:	
- Gross wages paid	90,000
- Indirect wages paid	24,000
- For building construction	6,000
Factory overheads:	
- Actual amount incurred (excluding items shown above)	96,000
- Absorbed in building construction	12,000
- Under-absorbed	4,800
Royalty paid	3,000
Selling distribution and administration overheads	15,000
Sales	2,70,000

At the end of the year, the stock of raw material and work-in-process was ₹ 33,00,000, and ₹15,00,000 respectively. The loss arising in the raw material account is treated as factory overheads. The building under construction was completed during the year. Gross profit margin is 20% on sales.

Required: PREPARE the relevant control accounts to record the above transactions in the cost ledger of the company. *(MTP 10 Marks Nov'21,RTP Nov'21 & May'22)* (Same concept different figures SM)

Answer 33

Cost Ledger Control Account

Particulars	(₹in '000)	Particulars	(₹in '000)
To Costing P&L A/c	2,70,000	By Balance b/d	3,24,000
To Building Construction A/c	26,400	By Stores Ledger control A/c	24,000
To Balance c/d	2,89,800	By Wages Control A/c	90,000
		By Factory overhead control A/c	96,000
		By Royalty A/c	3,000
		By Selling. Distribution and Administration overheads	15,000
		By Costing P&L A/c	34,200
	5,86,200		5,86,200

Stores Ledger Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Balance b/d	48,000	By WIP control A/c	30,000
To Cost Ledger control A/c	24,000	By Factory overheads control A/c	3,600
		By Building construction A/c	2,400
		By Factory overhead control A/c (loss) (bal. fig.)	3,000
		By Balance c/d	33,000
	72,000		72,000

Wages Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Cost Ledger control A/c	90,000	By Factory overhead control A/c	24,000
		By Building Construction A/c	6,000
		By WIP Control A/c (bal. fig.)	60,000
	90,000		90,000

Factory Overhead Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Stores Ledger control A/c	3,600	By Building Construction A/c	12,000
To Wages Control A/c	24,000	By Costing P&L A/c	4,800
To Cost Ledger control A/c	96,000	By WIP Control A/c (bal. fig)	1,09,800
To Stores Ledger control A/c (loss)	3,000		
	1,26,600		1,26,600

Royalty Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Cost Ledger control A/c	3,000	By WIP Control A/c	3,000
	3,000		3,000

Work-in-process Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Balance b/d	12,000	By Finished goods control A/c (bal. fig)	1,99,800
To Stores Ledger control A/c	30,000		
To Wages Control A/c	60,000		
To Factory overhead control A/c	1,09,800		
To Royalty A/c	3,000	By Balance c/d	15,000
	2,14,800		2,14,800

Finished Goods Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Balance b/d	2,58,000	By Cost of Goods Sold A/c (Refer working note)	2,16,000
To WIP control A/c	1,99,800	By Balance c/d	2,41,800
	4,57,800		4,57,800

Cost of Goods Sold Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Finished Goods control A/c	2,16,000	By Cost of sales A/c	2,16,000
	2,16,000		2,16,000

Selling, Distribution and Administration Overhead Control Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Cost Ledger control A/c	15,000	By Cost of sales A/c	15,000
	15,000		15,000

Cost of Sales Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Cost of Goods Sold A/c	2,16,000	By Costing P&L A/c	2,31,000
To Selling, Distribution and Administration A/c	15,000		
	2,31,000		2,31,000

Costing P&L Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Cost of Sales A/c	2,31,000	By Cost Ledger control A/c	2,70,000
To Factory overhead control A/c	4,800		
To Cost Ledger control A/c	34,200		
	2,70,000		2,70,000

Building Construction Account

Particulars	(₹ in '000)	Particulars	(₹ in '000)
To Balance b/d	6,000	By Cost Ledger control A/c	26,400
To Stores Ledger control A/c	2,400		
To Wages Control A/c	6,000		
To Factory overhead control A/c	12,000		
	26,400		26,400

Trial Balance

Particulars	Dr.	Cr.
	(₹ in '000)	(₹ in '000)
Stores Ledger Control A/c	33,000	
WIP Control A/c	15,000	
Finished Goods Control A/c	2,41,800	
Cost Ledger Control A/c		2,89,800
	2,89,800	2,89,800

Working Note:

Cost of Goods sold = $\frac{Rs.2.70,000\times80}{100}$ = Rs. 2,16,000

Question 34

The following are the balances existed in the books of JPG Ltd. for the year ended, 31st March, 2019:

Particulars	Dr.	Cr.
	(₹)	(₹)
Stores Ledger Control A/c	30,00,000	
WIP Control A/c	15,00,000	
Finished Goods Control A/c	25,00,000	
Manufacturing Overheads Control A/c		1,50,000
Cost Ledger Control A/c		68,50,000

During the year 2019-20, the following transactions took place:

Particulars	Amount (₹)
Finished product (at cost)	22,50,000
Manufacturing Overhead incurred	8,50,000
Raw material purchased	12,50,000
Factory wages	4,00,000
Indirect labour	2,00,000
Cost of sales	17,50,000
Materials issued to production	13,50,000
Sales returned (at cost)	90,000
Material returned to suppliers	1,30,000
Manufacturing overhead charged to production	8,50,000

Required:

PREPARE the following control accounts and Trial balance at the end of the year:

Cost Ledger, Stores Ledger, Work-in-process, Finished Stock, Manufacturing Overhead, Wages and Cost of Sales.

(RTP May'20) (Same concepts but different figures to RTP Nov'19, RTP May'18, MTP Oct'22 10 Marks, SM)

Answer 34

Cost Ledger Control Account

Particulars	(₹)	Particulars	(₹)
To Stores Ledger control A/c	1,30,000	By Balance b/d	68,50,000
To Costing Profit & Loss A/c	17,10,000	By Stores Ledger control A/c	12,50,000
		By Wages Control A/c	6,00,000
To Balance c/d	77,10,000	By Manufacturing overhead control A/c	8,50,000

	95,50,000		**95,50,000**

Store Ledger Control Account

Particulars	(₹)	Particulars	(₹)
To Balance b/d	30,00,000	By WIP Control A/c	13,50,000
To Cost Ledger control A/c	12,50,000	By Cost Ledger control A/c (return)	1,30,000
		By Balance c/d	27,70,000
	42,50,000		42,50,000

WIP Control Account

Particulars	(₹)	Particulars	(₹)
To Balance b/d	15,00,000	By Finished Stock Control A/c	22,50,000
To Wages Control A/c	4,00,000		
To Stores Ledger control A/c	13,50,000		
To Manufacturing overhead control A/c	8,50,000	By Balance c/d	18,50,000
	41,00,000		41,00,000

Finished Stock Control Account

Particulars	(₹)	Particulars	(₹)
To Balance b/d	25,00,000	By Cost of Sales A/c	17,50,000
To WIP Control A/c	22,50,000		
To Cost of Sales A/c (sales return)	90,000	By Balance c/d	30,90,000
	48,40,000		48,40,000

Manufacturing Overhead Control Account

Particulars	(₹)	Particulars	(₹)
To Cost Ledger Control A/c	8,50,000	By Balance b/d	1,50,000
To Wages Control A/c	2,00,000	By WIP Control A/c	8,50,000
		By Costing P&L A/c (under recovery)	50,000
	10,50,000		10,50,000

Wages Control Account

Particulars	(₹)	Particulars	(₹)
To Cost Ledger Control A/c	6,00,000	By WIP Control A/c	4,00,000
		By Manufacturing overhead control A/c	2,00,000
	6,00,000		6,00,000

Cost of Sales Account

Particulars	(₹)	Particulars	(₹)
To Finished Stock Control A/c	17,50,000	By Finished Stock Control A/c (sales return)	90,000
		By Costing Profit & Loss A/c	16,60,000
	17,50,000		17,50,000

Trial Balance

Particulars	Dr. (₹)	Cr. (₹)
Stores Ledger Control A/c	27,70,000	
WIP Control A/c	18,50,000	
Finished Goods Control A/c	30,90,000	
Cost Ledger Control A/c		77,10,000
	77,10,000	77,10,000

Working: **Costing P&L Account**

Particulars	(₹)	Particulars	(₹)
To Cost of Sales A/c	16,60,000	By Cost Ledger control A/c	17,10,000
To Manufacturing overhead control A/c	50,000		
	17,10,000		17,10,000

Question 35

LDR

The financial books of a company reveal the following data for the year ended 31st March, 2023:

	(₹)
Opening Stock:	
Finished goods 625 units	1,06,250
Work-in-process	92,000
01.04.2022 to 31.03.2023	
Raw materials consumed	16,80,000
Direct Labour	12,20,000
Factory overheads	8,44,000
Administration overheads (production related)	3,96,000
Dividend paid	2,44,000
Bad Debts	36,000
Selling and Distribution Overheads	1,44,000
Interest received	76,000
Rent received	92,000
Sales 12,615 units	45,60,000
Closing Stock: Finished goods 415 units	91,300
Work-in-process	82,400

The cost records provide as under:

- **Factory overheads are absorbed at 70% of direct wages.**
- **Administration overheads are recovered at 15% of factory cost.**
- **Selling and distribution overheads are charged at ₹ 6 per unit sold.**
- **Opening Stock of finished goods is valued at ₹ 240 per unit.**
- **The company values work-in-process at factory cost for both Financial and Cost Profit Reporting.**

Required:

(i) **Prepare statements for the year ended 31st March, 2023 showing:**
  - **the profit as per financial records**
  - **the profit as per costing records.**

(ii) **Prepare a statement reconciling the profit as per costing records with the profit as per financial records.** ***(RTP Nov'23, Nov'22)*** **(Same concept different figures RTP Nov'18, RTP May'21)**

Answer 35

(i) **Statement of Profit as per costing records (for the year ended March 31, 2023)**

	(₹)		(₹)
To Opening stock of Finished Goods	1,06,250	By Sales	45,60,000
To Work-in-process	92,000	By Closing stock of finished Goods	91,300
To Raw materials consumed	16,80,000	By Work-in-Process	82,400
To Direct labour	12,20,000	By Rent received	92,000
To Factory overheads	8,44,000	By Interest received	76,000
To Administration overheads	3,96,000		
To Selling & distribution overheads	1,44,000		
To Dividend paid	2,44,000		
To Bad debts	36,000		
To Profit	1,39,450		
	49,01,700		49,01,700

Statement of Profit as per costing records(for the year ended March 31,2023)

	(₹)
Sales revenue (A) (12,615 units)	45,60,000
Cost of sales:	
Opening stock (625 units × ₹ 240)	1,50,000
Add: Cost of production of 12,405 units (Refer to working note 2)	43,28,140

Less: Closing stock	(1,44,795)
$\left(\frac{Rs.43,28,140 \times 415\ units}{12,405\ units}\right)$	
Production cost of goods sold (12,615 units)	43,33,345
Selling & distribution overheads (12,615 units × ₹6)	75,690
Cost of sales: (B)	44,09,035
Profit: {(A) – (B)}	1,50,965

(ii) **Statement of Reconciliation**
(Reconciling the profit as per costing records with the profit as per financial records)

	(₹)	(₹)
Profit as per Cost Accounts		1,50,965
Add: Administration overheads over absorbed (₹5,64,540 – ₹3,96,000)	1,68,540	
Opening stock overvalued (₹1,50,000 – ₹ 1,06,250)	43,750	
Interest received	76,000	
Rent received	92,000	
Factory overheads over recovered (₹ 8,54,000 – ₹ 8,44,000)	10,000	3,90,290
		5,41,255
Less: Selling & distribution overheads under recovery (₹ 1,44,000 – ₹ 75,690)	68,310	
Closing stock overvalued (₹1,44,795 – ₹ 91,300)	53,495	
Dividend	2,44,000	
Bad debts	36,000	(4,01,805)
Profit as per financial accounts		1,39,450

Working notes:

a. Number of units produced

	Units
Sales	12,615
Add: Closing stock	415
Total	13,030
Less: Opening stock	(625)
Number of units produced	12,405

b. Cost Sheet

	(₹)
Raw materials consumed	16,80,000
Direct labour	12,20,000
Prime cost	29,00,000
Factory overheads (70% of direct wages)	8,54,000
Factory cost	37,54,000
Add: Opening work-in-process	92,000
Less: Closing work-in-process	(82,400)
Factory cost of goods produced	37,63,600
Administration overheads (15% of factory cost)	5,64,540
Cost of production of 12,405 units (Refer to working note 1)	43,28,140
Cost of production per unit:= $\frac{Total\ Cost\ of\ Production}{No.of\ units\ Produced} = \frac{Rs.43,28,140}{12,405 units}$ = Rs. 348.90	

Multiple Choice Questions (MCQ)

1. **Under the Non-integrated accounting system *(SM)***
   (a) Same ledger is maintained for cost and financial accounts by accountants
   (b) Separate ledgers are maintained for cost and financial accounts
   (c) (a) and (b) both
   (d) None of the above

Ans: (b)

2. **Notional costs *(SM)***
   (a) May be included in Integrated accounts
   (b) May be included in Non- integrated accounts
   (c) Cannot be included in Non-integrated accounts
   (d) None of the above

Ans: (b)

3. **Under Non-integrated accounting system, the account made to complete double entry is *(SM)***
   (a) Stores ledger control account
   (b) Work in progress control account
   (c) Finished goods control account
   (d) General ledger adjustment account

Ans: (d)

4. **Integrated systems of accounts are maintained *(SM)***
   (a) In separate books of accounts for costing and financial accounting purposes
   (b) In same books of accounts
   (c) Both (a) & (b)
   (d) None of the above

Ans: (b)

5. **Under Non-integrated system of accounting, purchase of raw material is debited to which account *(SM)***
   (a) Material control account / stores ledger control account
   (b) General ledger adjustment account
   (c) Purchase account
   (d) None of the above

Ans: (a)

6. **Under Non-integrated accounts, if materials worth ₹ 1,500 are purchased for a special job, then which account will be debited: *(SM)***
   (a) Special job account / work in process account
   (b) Material control account
   (c) Cost control account
   (d) None of the above

Ans: (a)

7. **Which account is to be debited if materials worth ₹ 500 are returned to vendor under Non-integrated accounts: *(SM)***
   (a) Cost ledger control account
   (b) Finished goods control account
   (c) WIP control account
   (d) None of the above

Ans: (a)

8. **Which of the following items is included in cost accounts? *(SM)***
   (a) Notional rent
   (b) Donations
   (c) Transfer to general reserve
   (d) Rent receivable

Ans: (a)

9. **When costing loss is ₹ 5,600, administrative overhead under-absorbed being ₹ 600, the loss as per financial accounts should be** ***(SM)***

(a) ₹ 5,600
(b) ₹ 6,200
(c) ₹ 5,000
(d) None of the above

Ans: (b)

10. **Which of the following items should be added to costing profit to arrive at financial profit?** ***(SM)***

(a) Over-absorption of works overhead
(b) Interest paid on debentures
(c) Income tax paid
(d) All of the above

Ans: (a)

11. **WHICH of the following item is not the cause of differences in Financial and Cost Accounts?** ***(MTP 2 Marks Nov'24)***

(a) Income tax not treated in Cost Accounts
(b) Dividends credited in Financial Accounts
(c) Losses on the sale of investments not treated in Financial Accounts
(d) Cost Accounts showing notional depreciation on the assets fullydepreciated for which book value is nil

Ans: (c)

12. **WHICH of the following is the correct journal entry as would appear in the cost books when there is under recovery of overheads?** ***(MTP 2 Marks dec'24)***

(a) Cost of Sales A/c.....	Dr.	xxx	
To Administrative Overhead Control A/c			xxx
(b) Production Overhead Control A/c.....	Dr.	xxx	
To Work-in-Process Ledger Control A/c			xxx
(c) Costing Profit & Loss A/c.....	Dr.	xxx	
To Administrative Overhead Control A/c			xxx
(d) Work-in-Process Ledger Control A/c	Dr.	xxx	
To Production Overhead Control A/c			xxx

Ans : (c)

CHAPTER 8: UNIT & BATCH COSTING

CONCEPTS OF THIS CHAPTER	
• Unit Costing method: overview and calculation. • Batch Costing method: explanation. • Accounting entries for cost elements under Batch Costing. • Determine cost for a batch. • Difference between Job Costing and Batch Costing.	LDR **LDR Questions** Q 17 Q 18

QUICK REVIEW OF IMPORTANT CONCEPTS

I. Meaning of Unit costing

- Used when the output produced is uniform, with each unit incurring the same cost.
- Also referred to as single or output costing.
- Commonly applied in industries such as paper, cement, steelworks, mining, and breweries.

$$\text{Cost per unit} = \frac{\textbf{Total cost of production}}{\textbf{No.of units produced}}$$

II. Meaning of Batch Costing

- A form of specific order costing where products are manufactured in predefined groups, called batches.
- The cost is determined based on the entire batch produced.
- For example, used in the pen manufacturing industry.

A batch consists of certain number of units which are PROCESSED SIMULTANEOUSLY. Under this method of manufacturing, the inputs are accumulated in the assembly line till it reaches minimum batch size. Soon after a batch size is reached, all inputs in a batch is processed for further operations.

III. ECONOMIC BATCH QUANTITY (EBQ) : It is the size of a batch where total cost of set-up and holding costs are at minimum.

EBQ Formula = EBQ Formula = $\sqrt{\frac{2DS}{C}}$

Where,
D = Annual Demand for the product
S = Setting up cost per Batch
C= Carrying cost per unit of production

Questions & Answers

Theory Questions

Question 1

Describe Unit Costing and Batch Costing. Give three examples of industries for each method where these are used. ***(PYP 4 Marks May '24)***

Answer 1

Unit costing is that method of costing where the output produced is identical and each unit of output requires identical cost. Under this method costs, are collected and analysed element wise and then total cost per unit is ascertained by dividing the total cost with the number of units produced.

Such a method of costing is used in the industries like paper, cement, steel works, mining, breweries etc.

Batch Costing: Batch Costing is a type of specific order costing where articles are manufactured in predetermined lots, known as batch. Cost per unit in a batch is ascertained by dividing the total cost of a batch by the number of units produced in that batch.

Such a method of costing is used in the case of pharmaceutical or drug industries, readymade garment industries, industries, manufacturing electronic parts of T.V. radio sets etc.

Question 2

STATE the differences between Job costing and Batch costing
(MTP 5 Marks, May'20, Oct 19, SM, RTP Nov'21, RTP Nov'18, RTP May'23)

Answer 2

Differences between Job costing and Batch costing:

Sr. No	Job Costing	Batch Costing
1	Method of costing used for non- standard and non- repetitive products produced as per customer specifications and against specific orders.	Homogeneous products produced in a continuous production flow in lots.
2	Cost determined for each Job.	Cost determined in aggregate for the entire Batch and then arrived at on per unit basis.
3	Jobs are different from each other and independent of each other. Each Job is unique.	Products produced in a batch are homogeneous and lack of individuality.

Question 3

In Batch Costing, STATE how is Economic Batch Quantity determined?
(MTP 4 Marks, Mar'22, Mar'18, SM)

Answer 3

The economic batch size or Economic Batch Quantity may be determined by calculating the total cost for a series of possible batch sizes and checking which batch size gives the minimum cost. The objective here being to determine the production lot (Batch size) that optimizes on both set up and inventory holding cots formula. The mathematical formula usually used for its determination is as follows:

$$(EBQ) = \sqrt{\frac{2DS}{C}}$$

Where,

D = Annual demand for the product

S =Setting up cost per batch

C=Carrying cost per unit of production

Question 4

DESCRIBE Unit Costing. WHAT kind of industries follow this method of costing? ***(MTP 5 Marks Sep'22, SM)***

Answer 4

Unit costing: It is that method of costing where the output produced is identical and each unit of output requires identical cost. Unit costing is synonymously known as single or output costing, but these are sub-division of unit costing method.

This method of costing is followed by industries which produce single output or few variants of a single output, therefore, this method of costing, finds its application in industries like paper, cement, steel works, mining, breweries etc. These types of industries produce identical products and therefore have identical costs.

Question 5

Happi Ltd. Produces product RP in batches, management of the Happi Ltd. wants to know the number of batches of product RP to be produced where the cost incurred on batch setup and carrying cost of production is at optimum level. ***(MTP 4 Marks Apr'24,SM)***

Answer 5

Economic batch quantity in Batch Costing: In batch costing the most important problem is the determination of 'Economic Batch Quantity'. The determination of economic batch quantity involves two types of costs viz, (i) set up cost and (ii) carrying cost. With the increase in the batch size, there is an increase in the carrying cost but the set up cost per unit of product is reduced. This situation is reversed when the batch size is reduced. Thus there is one particular batch size for which both set up and carrying costs are minimum. This size of a batch is known as economic or optimum batch quantity.

Economic batch quantity can be determined with the help of table, graph or mathematical formula. The mathematical formula usually used for its determination is as follows:

$$E.B.Q = \sqrt{\frac{2DS}{C}}$$

Where, D= Annual demand for the product

S = Setting up cost per batch

C = Carrying cost per unit of production per annum

Practical Questions

Question 6

PS Ltd. manufactures articles in predetermined lots simultaneously. The following costs have been incurred for Batch No. 'PS143' in the month of March, 2022:

Units produced 1,000 units

Direct materials cost ₹ 2,00,000

Direct Labour -

Department A 800 labour hours @ ₹ 100 per hour.

Department B 1,400 labour hours @ ₹ 120 per hour.

Factory overheads are absorbed on labour hour basis and the rates are:

Department A @ ₹ 140 per hour.

Department B @ ₹ 80 per hour.

Administrative overheads are absorbed at 10% of selling price.

The firm expects 25% gross profit (sales value minus factory cost) for determining the selling price.

You are required to CALCULATE the selling price per unit of Batch No. 'PS143'. ***(RTP Nov'22)***

Answer 6

Statement showing selling price per unit of Batch number 'PS143'

Particulars	Amount (₹)	Amount (₹)
Direct Materials		2,00,000
Direct Labour		
Department A 800 labour hours @ ₹100 per hour	80,000	
Department B 1400 labour hours @ ₹120 per hour	1,68,000	**2,48,000**
Factory overheads		
Department A 800 labour hours @ ₹140 per hour	1,12,000	
Department B 1400 labour hours @ ₹80 per hour	1,12,000	2,24,000
Factory Cost		**6,72,000**
Add: Administrative overheads (10% of selling price) (6,72,000/75% x 10%)		89,600
Cost of production		7,61,600
Add: Profit (15% of selling price) (6,72,000/75% x 15%)		1,34,400

Selling price of batch no 'PS143'		**8,96,000**
Selling price per unit (8,96,000 / 1000 units)		**896**

Alternatively, selling price calculation:- Selling price assume X

25% = (X – factory cost) / X

or 0.25 X = X- 6,72,000

or 0.75 X = 6,72,000

hence X = ₹ 8,96,000

Question 7

Wave is a pharmaceutical company which produces vaccines for diseases like Monkey Pox, Covid-19 and Chickenpox. A distributor had given an order for 1,600 Monkey Pox Vaccines. The company can produce 80 vaccines at a time. To process a batch of 80 Monkey Pox vaccines, the following costs would be incurred:

	₹
Direct Materials	**4,250**
Direct wages	**500**
Lab set-up cost	**1,400**

The Production Overheads are absorbed at a rate of 20% of direct wages and 20% of total production cost is charged in each batch for Selling, distribution and administration Overheads. The company is willing to earn profit of 25% on sales value.

You are required to determine:

(i) Total Sales value for 1,600 Monkey Pox Vaccines

(ii) Selling price per unit of the Vaccine. ***(PYP 5 Marks Nov'22)***

Answer 7

(i) & (ii) Calculation of Sales value and Selling price per unit of Monkey Pox vaccine

Particulars	Amount (₹) per Batch	Amount (₹) for 1600 units or 20 batches	Amount (₹) per unit
Direct materials	4,250	85,000	53.125
Direct wages	500	10,000	6.250
Lab set-up cost	1,400	28,000	17.500
Production overheads (20% of direct wages)	100	2,000	1.250
Production Cost	6,250	1,25,000	78.125
Selling,distribution and administration cost (20% of Production cost)	1,250	25,000	15.625
Total Cost	7,500	1,50,000	93.75
Add: Profit (1/3rd of Total cost or 25% of Sales value)	2,500	50,000	31.25
Sales value	10,000	2,00,000	125.00

EXAM INSIGHTS: This is a Numerical problem on batch costing for calculation of Total Sales Value and Selling Price Per Unit of the vaccine. Most of the examinees answered in the correct lines and secured **good marks.**

Question 8

Wave manufactures mother boards used in smart phones. A smart phone requires one mother board. As per the study conducted by the Indian Cellular Association, there will be a demand of 180 million smart phones in the coming year. Wave is expected to have a market share of 5.5% of the total market demand of the mother boards in the coming year. It is estimated that it costs ₹6.25 as inventory holding cost per board per month and that the set-up cost per run of board manufacture is ₹33,500.

(i) COMPUTE the optimum run size for board manufacturing?

(ii) Assuming that the company has a policy of manufacturing 80,000 boards per run, CALCULATE how

much extra costs the company would be incurring as compared to the optimum run suggested in (i) above? *(RTP Nov'20,MTP 5 Marks Sep'23)*

Answer 8

(i) Computation of optimum run size

Optimum run size or Economic Batch Quantity (EBQ) = $\sqrt{\frac{2\times D\times S}{C}}$

Where, D = Annual demand i.e. 5.5% of 18,00,00,000 = 99,00,000 units

S = Set-up cost per run = ₹33,500

C = Inventory holding cost per unit per annum

= ₹6.25 × 12 months = ₹75

EBQ = $\sqrt{\frac{2\times 99,00,000 \text{Units} \times \text{Rs.}33,500}{\text{Rs.}75}}$ = 94,042.5 Units or 94,043 Units

(ii) Calculation of Total Cost of set-up and inventory holding

	Batch size	No. of set- ups	Set-up Cost (₹)	Inventory holding cost (₹)	Total Cost (₹)
A	80,000 units	124 $\left(\frac{99,00,000}{80,000}\right)$	41,54,000 (124 × ₹33,500)	30,00,000 $\left(\frac{80,000\times \text{Rs.}75}{2}\right)$	71,54,000
B	94,043 units	106 $\left(\frac{99,00,000}{94,043}\right)$	35,51,000 (106 × ₹33,500)	35,26,612.5 $\left(\frac{94,043\times \text{Rs.}75}{2}\right)$	70,77,612.50
	Extra Cost (A – B)				76,387.50

Question 9

GHI Ltd. manufactures 'Stent' that is used by hospitals in heart surgery. As per the estimates provided by Pharmaceutical Industry Bureau, there will be a demand of 40 Million 'Stents' in the coming year. GHI Ltd. is expected to have a market share of 2.5% of the total market demand of the Stents in the coming year. It is estimated that it costs 1.50 as inventory holding cost per stent per month and that the set-up cost per run of stent manufacture is ₹ 225.

Required:

(i) What would be the optimum run size for Stent manufacture?

(ii) What is the minimum inventory holding cost?

(iii) Assuming that the company has a policy of manufacturing 4,000 stents per run, how much extra costs the company would be incurring as compared to the optimum run suggested in (i) above?

(PYP 5 Marks Jan'21) (Same concept different figures RTP May'22)

Answer 9

(i) Computation of Optimum Run size of 'Stents' or Economic Batch Quantity (EBQ)

Economic Batch Quantity (EBQ) = $\sqrt{\frac{2Ds}{C}}$

Where, D = Annual demand for the Stents

= 4,00,00,000 × 2.5% = 10,00,000 units

S = Set- up cost per run

= ₹ 225

C = Carrying cost per unit per annum

= ₹ 1.50 × 12 = ₹ 18

EBQ = $\sqrt{\frac{2\times 10,00,000 \times \text{Rs.}225}{\text{Rs.}18}}$

= 5,000 units of Stents

(ii) Minimum inventory holding cost

Minimum Inventory Cost = Average Inventory × Inventory Carrying Cost per unit per annum

= (5,000 ÷ 2) × ₹ 18
= ₹ 45,000

(iii) Calculation of the extra cost due to manufacturing policy

	When run size is 4,000 units	When run size is 5,000 units i.e. at EBQ
Total set up cost	$= \frac{10,00,000}{4,000} \times Rs.\ 225$ = ₹ 56,250	$= \frac{10,00,000}{5,000} \times Rs.\ 225$ = ₹ 45,000
Total Carrying cost	½ × 4,000 × ₹ 18 = ₹ 36,000	½ × 5,000 × ₹ 18 = ₹ 45,000
Total Cost	**₹ 92,250**	**₹ 90,000**

Extra cost = ₹ 92,250 - ₹ 90,000 = **₹ 2,250**

Question 10

Su Limited manufactures a variety of products. The annual demand for one of its products- Product 'X' is estimated as ₹1,35,000 units. Product 'X' is to be manufactured done in batches. Set up cost of each batch is ₹ 3,375 and inventory holding cost is ₹ 5 per unit. It is expected that demand of Product 'X' would be uniform throughout the year.

Required:

(i) Calculate the Economic Batch (EBQ) for Product 'X'.

(ii) Assuming that the company has a policy of manufacturing 7,500 units of Product 'X' per batch, calculate the additional cost incurred as compared to the cost incurred as per Economic Batch Quantity (EBQ) as computed in (i) above. ***(PYP 5 Marks, May'23)***

Answer 10

i) **Economic Batch Quantity (EBQ) =** $\sqrt{\frac{2DS}{C}}$

where,

D = Annual demand for the product

S = Set-up cost per batch

C = Carrying cost per unit per annum.

$\sqrt{\frac{2DS}{C}} = \sqrt{\frac{2 \times 1,35,000 \times 3,375}{5}}$ **= 13,500 units.**

ii) Total Cost (of maintaining the inventories) when batch size (Q) are 13,500 and 7,500 units respectively

Total cost = Total set-up cost + Total carrying cost.

	When batch size is 13,500 units	When batch size is 7,500 units
Total set up cost	$= \frac{1,35,000}{13,500} \times$ ₹ 3,375 = ₹ 33,750 Or, No. of setups = 10 = 10 x ₹ 3,375 = ₹ 33,750	$= \frac{1,35,000}{7,500} \times$ ₹ 3,375 = ₹ 60,750
Total Carrying cost	1/2 × 13,500 × 5 = ₹ 33,750	1/2 × 7,500 × 5 = ₹ 18,750
Total Cost	₹ 67,500	₹ 79,500

₹ 12,000 is the excess cost borne by the company due to batch size not being economic batch quantity.

Alternative presentation

	EOQ 13,500	Batch size 7500	Extra cost	Saving
No of setup	10	18	8 x 3375 = 27,000	
Carrying cost	13,500 – 7500 = 6000/ 2 @ 5			15,000

Net extra cost = (27,000- 15,000) = ₹ 12,000

EXAM INSIGHTS: This numerical question was based on Economic Batch Quantity in which it is required to calculate excess cost borne by the company due to batch size not being EBQ. Most of the examinees answered correctly and showed an **overall good performance.**

Question 11

Alpha Ltd. has an Annual demand from a single customer for 60,000 Covid-19 vaccines. The customer prefers to order in the lot of 15,000 vaccines per order. The production cost of vaccine is ₹ 5,000 per vaccine. The set-up cost per production run of Covid-19 vaccines is ₹ 4,800. The carrying cost is ₹ 12 per vaccine per month.

You are required to:

(i) FIND the most Economical Production Run.

(ii) CALCULATE the extra cost that company incurs due to production of 15,000 vaccines in a batch.

(MTP 4 Marks Aug'24,PYP 5 Marks Jul'21)

Answer 11

(i) Calculation of most Economical Production Run

$$= \sqrt{\frac{2\times 60{,}000\times ₹4{,}800}{12\times 12}} = 2{,}000 \text{ vaccine}$$

(ii) Calculation of Extra Cost due to processing of 15,000 vaccines ina batch

	When run size is2,000 vaccines	When run size is15,000 vaccines
Total set up cost	$= \frac{60{,}000}{2{,}000} \times ₹\,4{,}800$ = ₹1,44,000	$= \frac{60{,}000}{15{,}000} \times ₹\,4{,}800$ = ₹19,200
Total Carrying cost	½ × 2,000 × ₹144 = ₹1,44,000	½ × 15,000 × ₹144 = ₹10,80,000
Total Cost	₹2,88,000	₹10,99,200

Thus, extra cost = ₹ 10,99,200 – ₹ 2,88,000 = ₹ 8,11,200

EXAM INSIGHTS: It was a practical problem requiring to calculate Economic Production Run and extra cost due to a different production plan. Performance of the examinees was above average.

Question 12

A jobbing factory has undertaken to supply 300 pieces of a component per month for the ensuing six months. Every month a batch order is opened against which materials and labour hours are booked at actual. Overheads are levied at a rate per labour hour. The selling price contracted for is ₹ 8 per piece. From the following data CALCULATE the cost and profit per piece of each batch order and overall position of the order for 1,800 pieces.

Month	Batch Output	Material cost (₹)	Direct wages (₹)	Direct labour hours
January	310	1150	120	240
February	300	1140	140	280
March	320	1180	150	280
April	280	1130	140	270
May	300	1200	150	300
June	320	1220	160	320

The other details are:

Month	Chargeable expenses (₹)	Direct labour (Hours)
January	12,000	4,800

February	10,560	4,400
March	12,000	5,000
April	10,580	4,600
May	13,000	5,000
June	12,000	4,800

(RTP Sep'24) (MTP 5 Marks, Oct'20) (Same concept different figures MTP 5 Marks Mar'21, RTP May'23)

Answer 12

Statement of Cost and Profit per batch

Particulars	Jan.	Feb.	March	April	May	June	Total
Batch output (in units)	310	300	320	280	300	320	1,830
Sale value (₹)	2,480	2,400	2,560	2,240	2,400	2,560	14,640
Material cost (₹)	1,150	1,140	1,180	1,130	1,200	1,220	7,020
Direct wages (₹)	120	140	150	140	150	160	860
Chargeable expenses* (₹)	600	672	672	621	780	800	4,145
Total cost (₹)	1,870	1,952	2,002	1,891	2,130	2,180	12,025
Profit per batch (₹)	610	448	558	349	270	380	2,615
Total cost per unit (₹)	6.03	6.51	6.26	6.75	7.10	6.81	6.57
Profit per unit (₹)	1.97	1.49	1.74	1.25	0.90	1.19	1.43

Overall position of the order for 1,800 units

Sales value of 1,800 units @ ₹ 8 per unit	₹ 14,400
Total cost of 1,800 units @ ₹ 6.57 per unit	₹ 11,826
Profit	₹ 2,574

*$\frac{\text{Chargeable expenses}}{\text{Direct labour hour for the month}}$ × Direct labour hours for batch

Question 13

Zee Ltd. manufactures pistons used in car engines. As per the study conducted by the Auto Parts Manufacturers Association, there will be a demand of 80 million pistons in the coming year. Wave is expected to have a market share of 2.15% of the total market demand of the pistons in the coming year. It is estimated that it costs ₹ 2.50 as inventory holding cost per piston per month and that the set-up cost per run of piston manufacture is ₹ 4,500.

(i) COMPUTE the optimum run size for piston manufacturing?

(ii) Assuming that the company has a policy of manufacturing 20,000 pistons per run, CALCULATE how much extra costs the company would be incurring as compared to the optimum run suggested in (i) above? *(MTP 5 Marks, Oct'21)* (Same concept different figures MTP 5 Marks Apr 19, MTP 5 Marks Mar 19 but different figures)

Answer 13

(i) Optimum run size or Economic Batch Quantity (EBQ) = $\sqrt{\frac{2 \times D \times s}{C}}$

Where, D = Annual demand i.e. 2.15% of 8,00,00,000 = 17,20,000 units

S = Set-up cost per run = ₹ 4,500

C = Inventory holding cost per unit per annum

= ₹ 2.5 × 12 months = ₹ 30

$$EBQ = \sqrt{\frac{2 \times 17,20,000 \text{ units} \times Rs.4,500}{Rs.30}} = 22,716 \text{ units}$$

(ii) Calculation of Total Cost of set-up and inventory holding

	Batch size	No. of set- ups	Set-up Cost (₹)	Inventory holding cost (₹)	Total Cost (₹)
A	20,000 units	86 $\left(\frac{17,20,000}{20,000}\right)$	3,87,000 (86 × ₹ 4,500)	3,00,000 $\left(\frac{20,000 \times Rs.30}{2}\right)$	6,87,000

B	22,716 units	76 $\left(\frac{17,20,000}{22,716}\right)$	3,42,000 (76 × ₹ 4,500)	3,40,740 $\left(\frac{22,716 \times Rs.30}{2}\right)$	6,82,740
	Extra Cost (A – B)				**4,260**

Question 14

Luxz Ltd. is into luxury pens business manufacturing 120 pens in a batch. To process a single batch of 120 pens, company needs to incur following expenditure:

Particulars	(₹)
Direct Materials	57,375
Direct wages	6,750
Batch Set-up cost	18,900

For each batch, the company absorbs the Production Overheads at a rate of 20% of direct wages and 15% of the total production cost is allocated to cover selling, distribution, and administrative overheads.

During the month of March, Luxz Ltd. received an order for 2,400 pens and the company aims to achieve a profit margin of 25% on its sales value.

You are required to DETERMINE the total sales value for 2,400 pens. ***(MTP 2 Marks Nov'24)***

Answer 14

Determination of total sales value of Luxury pens

Particulars	Amount per Batch (₹)	Amount for 2,400 units or 20 batches (₹)
Direct materials	57,375	11,47,500
Direct wages	6,750	1,35,000
Batch set-up cost	18,900	3,78,000
Production overheads (20% of direct wages)	1,350	27,000
Total Production Cost	84,375	**16,87,500**
Selling, distribution and administration cost (15% of Total Production cost)	12,656	2,53,125
Total Cost	97,031	**19,40,625**
Add: Profit (25% of Sales valueor 1/3rd of Total cost)	32,344	6,46,875
Total Sales value	1,29,375	**25,87,500**

Question 15

Language Achievers, a renowned institute specializing in TOEFL preparation, has secured a spacious hall for 20,000 on weekly basis with a seating capacity of 250 students. The instructor, highly qualified and experienced, is compensated generously with an honorarium of 1,500 per lecture. Additionally, he receives reimbursement for travel expenses of ₹ 200 per day along with refreshments costing 1,500 per week to ensure his comfort and focus during teaching sessions. Administrative and miscellaneous expenses, covering essential utilities and materials are, 500 per week. Language Achievers has meticulously planned its curriculum, scheduling batches of 2 lectures per day, 5 days a week for 30 weeks, ensuring comprehensive coverage of the TOEFL syllabus.

Required:

(i) Calculate the total cost per batch.

(ii) Determine the minimum fee per student in a batch to cover costs, if the batch is fully occupied.

(iii) Calculate the fee to be charged from. each student if batch is 80% filled and institute aims to achieve a profit margin of 25% on the fee. ***(PYP 5 Marks Sep'24)***

Answer 15

(i) Calculation of Total cost per batch

Particulars	Amount (₹)

Hall Charges (₹20,000 x 30)	6,00,000
Honorarium of instructor (₹1,500 x 2 x 5 x 30)	4,50,000
Reimbursement of travel expenses (₹200 x 5 x 30)	30,000
Refreshment (₹1,500 x 30)	45,000
Administrative and miscellaneous expenses(₹500 x 30)	15,000
Total Cost	11,40,000
No. of Batches	1
Total cost per batch	11,40,000

(ii) Minimum fee per student in a batch to cover costs

$$= \frac{\text{Total cost per batch}}{\text{Students per batch}}$$

$$= \frac{11,40,000}{250} = ₹\,4,560$$

(iii) Number of Students if batch is 80% filled

= 250 students x 80% = 200 students

Total Fee to be recovered to achieve 25% profit margin on the fee

= ₹ 11,40,000 + (₹ 11,40,000 x 1/4th of sales or 1/3rd of the cost)

= ₹15,20,000

Fee per student

$$= \frac{\text{Total Fee per batch}}{\text{student per batch}}$$

$$= \frac{15,20,000}{200} = ₹\,7,600$$

Question 16

Phonick Ltd. accepted an order to supply 2,000 units per month of Product 'E' for the third quarter of the year. Each monthly batch order records the actual costs of materials and labour. Overheads are charged at a rate per labour hour. The selling price is established at ₹ 15 per unit.
Information relating to Material, Labour and Overheads is provided below:

Month	Batch Output (Nos)	Material Cost (₹)	Labour Cost (₹)	Overheads (₹)	Total Labor Hours
October	2,500	12,500	5,000	24,000	8,000
November	3,000	18,000	6,000	18,000	9,000
December	2,000	10,000	4,000	30,000	10,000

Labour is paid at the rate of ₹ 2 per hour.
CALCULATE the cost and profit per unit of each batch order along with the overall position of the order for 6,000 units. *(RTP Jan'25)*

Answer 16

Statement of Cost and Profit per unit of each batch order

	October	November	December	Total
a) Batch Output (Nos.)	2,500	3,000	2,000	7,500
b) Sales Value (@ ₹ 15 per unit)	(₹) 37,500	(₹) 45,000	(₹) 30,000	(₹) 1,12,500
Cost				
Material	**12,500**	**18,000**	**10,000**	**40,500**
Wages	**5,000**	**6,000**	**4,000**	**15,000**
Overheads (working note)	**7,500**	**6,000**	**6,000**	**19,500**
c) Total	**25,000**	**30,000**	**20,000**	**75,000**
d) Profit per batch (b) – (c)	**12,500**	**15,000**	**10,000**	**37,500**
e) Cost per unit (c) ÷ (a)	**10**	**10**	**10**	
f) Profit per unit (d) ÷ (a)	**5**	**5**	**5**	

Overall Position of the Order for 6,000 Units

Particulars	Amount (₹)
Sales value (6,000 units × ₹15)	90,000
Less: Total cost (6,000 units × ₹10)	60,000
Profit	30,000

Working Note:

Calculation of overhead per hour

Particulars	October	November	December
(i) Labour hours:			
$= \frac{\text{Labour cost}}{\text{Labour rates per hour}}$	$\frac{₹\ 5,000}{2}$ = 2,500 hrs.	$\frac{₹\ 6,000}{2}$ = 3,000 hrs.	$\frac{₹\ 4,000}{2}$ = 2,000 hrs.
(ii) Overhead per hour			
$= \frac{\text{Total overheads}}{\text{Total Labour hour}}$	$\frac{₹\ 24,000}{8,000\ \text{hrs.}} = ₹\ 3$	$\frac{₹\ 18,000}{9,000\ \text{hrs.}} = ₹\ 2$	$\frac{₹\ 30,000}{10,000\ \text{hrs.}} = ₹\ 3$
(iii) Overhead for the batch (i) × (ii)	₹ 7,500	₹ 6,000	₹ 6,000

Question 17

LDR

Arnav Confectioners (AC) owns a bakery which is used to make bakery items like pastries, cakes and muffins. AC use to bake atleast 50 units of any item at a time. A customer has given an order for 600 cakes. To process a batch of 50 cakes, the following cost would be incurred:

Direct materials - Rs. 5,000
Direct wages - Rs. 500
Oven set-up cost Rs. 750

AC absorbs production overheads at a rate of 20% of direct wages cost. 10% is added to the total production cost of each batch to allow for selling, distribution and administration overheads.

AC requires a profit margin of 25% of sales value. Required:

(i) DETERMINE the price to be charged for 600 cakes.
(ii) CALCULATE cost and selling price per cake.
(iii) DETERMINE what would be selling price per unit If the order is for 605 cakes.
***(MTP 5 Marks Aug'18 & Mar'23,RTP May'18)* (Same concept different figures SM)**

Answer 17

Statement of cost per batch and per order

No. of batch = 600 units ÷ 50 units = 12 batches

	Particulars	Cost per batch (Rs.)	Total Cost (Rs.)
	Direct Material Cost	5,000.00	60,000
	Direct Wages	500.00	6,000
	Oven set-up cost	750.00	9,000
	Add: Production Overheads (20% of Direct wages)	100.00	1,200
	Total Production cost	6,350.00	76,200
	Add: S&D and Administration overheads (10% of Total production cost)	635.00	7,620
	Total Cost	6,985.00	83,820
	Add: Profit (1/3rd of total cost)	2,328.33	27,940
(i)	**Sales price**	**9,313.33**	**1,11,760**
	No. of units in batch	50 units	
(ii)	**Cost per unit** (Rs.6,985 ÷ 50 units)	**139.70**	
	Selling price per unit (9,313.33 ÷ 50 units)	**186.27**	

(iii) If the order is for 605 cakes, then selling price per cake would be as below:

Particulars	Total Cost (Rs.)
Direct Material Cost	60,500
Direct Wages	6,050
Oven set-up cost	9,750
Add: Production Overheads (20% of Direct wages)	1,210
Total Production cost	77,510
Add: S&D and Administration overheads (10% of Total production cost)	7,751
Total Cost	85,261

Add: Profit (1/3rd of total cost)	28,420
Sales price	**1,13,681**
No. of units	605 units
Selling price per unit (Rs.1,13,681 ÷ 605 units)	**187.90**

Question 18

LDR

Arnav Ltd. operates in beverages industry where it manufactures soft- drink in three sizes of Large (3 litres), Medium (1.5 litres) and Small (600 ml) bottles. The products are processed in batches. The 5,000 litres capacity processing plant consumes electricity of 90 Kilowatts per hour and a batch takes 1 hour 45 minutes to complete. Only symmetric size of products can be processed at a time. The machine set-up takes 15 minutes to get ready for next batch processing. During the set-up power consumption is only 20%.

(i) The current price of Large, Medium and Small are ₹ 150, ₹ 90 and ₹ 50 respectively.

(ii) To produce a litre of beverage, 14 litres of raw material-W and 25ml of Material-C are required which costs ₹ 0.50 and ₹ 1,000 per litre respectively.

(iii) 20 direct workers are required. The workers are paid ₹ 880 for 8 hours shift of work.

(iv) The average packing cost per bottle is ₹ 3

(v) Power cost is ₹ 7 per Kilowatt -hour (Kwh)

(vi) Other variable cost is ₹ 30,000 per batch.

(vii) Fixed cost (Administration and marketing) is ₹ 4,90,00,000.

(viii) The holding cost is ₹ 1 per bottle per annum.

The marketing team has surveyed the following demand (bottle) of theproduct:

Large	Medium	Small
3,00,000	7,50,000	20,00,000

You are required to CALCULATE profit/ loss per batch and alsoCOMPUTE Economic Batch Quantity (EBQ).

(RTP May'24, MTP 10 Marks Apr'22)

Answer 18

Workings:

1. Maximum number of bottles that can be processed in a batch: = $\frac{5000\ ltrs}{Bottle\ volume}$

Large		Medium		Small	
Qty (ltr)	**Max bottles**	**Qty (ltr)**	**Max bottles**	**Qty (ltr)**	**Max bottles**
3	1,666	1.5	3,333	0.6	8,333

*For simplicity of calculation small fractions has been ignored.

2. Number of batches to be run:

		Large	Medium	Small	Total
A	Demand	3,00,000	7,50,000	20,00,000	
B	Bottles per batch(Refer WN-1)	1,666	3,333	8,333	
C	No. of batches [A÷B]	180	225	240	645

*For simplicity of calculation small fractions has been ignored.

Quantity of Material-W and Material C required to meet demand:

	Particulars	Large	Medium	Small	Total
A	Demand (bottle)	3,00,000	7,50,000	20,00,000	
B	Qty per bottle(Litre)	3	1.5	0.6	
C	Output (Litre)[A×B]	9,00,000	11,25,000	12,00,000	32,25,000
D	Material-W perlitre of output(Litre)	14	14	14	
E	Material-W required (Litre)[C×D]	**1,26,00,000**	**1,57,50,000**	**1,68,00,000**	**4,51,50,000**
F	Material-C required per litreof output (ml)	25	25	25	
G	Material-C required (Litre)[(C×F) ÷1000]	**22,500**	**28,125**	**30,000**	**80,625**

3. No. of Man-shift required:

		Large	Medium	Small	Total
A	No. of batches	180	225	240	645

B	Hours required per batch	2	2	2	
	(Hours)				
C	Total hours required (Hours) [A×B]	360	450	480	1,290
D	No. of shifts required [C÷8]	45	57	60	162
E	**Total manshift [D×20 workers]**	**900**	**1,140**	**1,200**	**3,240**

4. Power consumption in Kwh

		Large	Medium	Small	Total
For processing					
A	No. of batches	180	225	240	645
B	Hours required perbatch (Hours)	1.75	1.75	1.75	1.75
C	Total hours required(Hours) [A×B]	315	393.75	420	1,128.75
D	Power consumption perhour	90	90	90	90
E	**Power consumption inKwh [C×D]**	**28,350**	**35,437.5**	**37,800**	**1,01,587.5**
F	**Per batch consumption(Kwh) [E÷A]**	**157.5**	**157.5**	**157.5**	**157.5**
For set-up					
G	Hours required perbatch (Hours)	0.25	0.25	0.25	0.25
H	Total hours required(Hours) [A×G]	45	56.25	60	161.25
I	Power consumption perhour [20%×90]	18	18	18	18
J	**Power consumption inKwh [H×I]**	**810**	**1,012.5**	**1,080**	**2,902.5**
K	**Per batch consumption(Kwh) [J÷A]**	**4.5**	**4.5**	**4.5**	**4.5**

* Per batch consumption can be directly calculated as [Hours required per batch x Power consumption per hour]

Calculation of Profit/ loss per batch:

	Particulars	Large	Medium	Small	Total
A	Demand (bottle)	3,00,000	7,50,000	20,00,000	30,50,000
B	Price per bottle(₹)	150	90	50	
C	**Sales value (₹)[A×B]**	**4,50,00,000**	**6,75,00,000**	**10,00,00,000**	**21,25,00,000**
	Direct Materialcost:				
E	Material-W (₹) [Qty in WN-3 × ₹ 0.50]	63,00,000	78,75,000	84,00,000	2,25,75,000
F	Material-C (₹) [Qty in WN-3 × ₹1,000]	2,25,00,000	2,81,25,000	3,00,00,000	8,06,25,000
G	[E+F]	**2,88,00,000**	**3,60,00,000**	**3,84,00,000**	**10,32,00,000**
H	Direct Wages (₹) [Man-shift in WN-4 × × ₹ 880]	7,92,000	10,03,200	10,56,000	28,51,200
I	Packing cost (₹)[A×₹3]	9,00,000	22,50,000	60,00,000	91,50,000
	Power cost (₹)				
J	For processing (₹)[WN-5 × ₹7]	1,98,450	2,48,062.5	2,64,600	7,11,112.5
K	For set-up time(₹) [WN-5 × ₹7]	5,670	7,087.5	7,560	20,317.5
L	[J+K]	**2,04,120**	**2,55,150**	**2,72,160**	**7,31,430**
M	Other variable cost (₹) [No. of batch in WN-2 × ₹ 30,000]	54,00,000	67,50,000	72,00,000	1,93,50,000
N	**Total Variablecost per batch**	**3,60,96,120**	**4,62,58,350**	**5,29,28,160**	**13,52,82,630**
	[G+H+I+L+M]				
O	**Profit/ loss before fixed cost [C-N]**	**89,03,880**	**2,12,41,650**	**4,70,71,840**	**7,72,17,370**
P	Fixed Cost				4,90,00,000
Q	**Total Cost [O-P]**				**2,82,17,370**

Computation of Economic Batch Quantity (EBQ):

$$EBQ = \sqrt{\frac{2 \times D \times S}{C}}$$

D = Annual Demand for the Product = Refer A below

S = Set-up cost per batch = Refer D below

C = Carrying cost per unit per annum =Refer E below

	Particulars	Large	Medium	Small
A	Annual Demand (bottle)	3,00,000	7,50,000	20,00,000
Set-up Cost:				
B	Power cost for set-up time (₹) [Consumption per batch in WN-5 × ₹7]	31.50	31.50	31.50
C	Other variable cost (₹) *	30,000	30,000	30,000
D	Total Set-up cost [B+C]	30,031.50	30,031.50	30,031.50
E	Holding cost:	1.00	1.00	1.00
F	**EBQ (Bottle)**	**1,34,234**	**2,12,243**	**3,46,592**

* Other variable cost is assumed to be part of set-up cost.

Multiple Choice Questions (MCQ)

1. **Different businesses in order to determine cost of their product or service offering follow:** ***(SM)***
   (a) Different methods of Costing
   (b) Uniform Costing
   (c) Different techniques of costing
   (d) None of the above

Ans: (a)

2. **In order to determine cost of the product or service, following are used:** ***(SM)***
   (a) Techniques of costing like Marginal, Standard etc.
   (b) Methods of Costing
   (c) Comparatives
   (d) All of the above

Ans: (b)

3. **Unit Costing is applicable where:** ***(SM)***
   (a) Product produced are unique and no 2 products are same
   (b) Dissimilar articles are produced as per customer specification
   (c) homogeneous articles are produced on large scale
   (d) Products made require different raw materials

Ans: (c)

4. **In case product produced or jobs undertaken are of diverse nature, the system of costing to be used should be:** ***(SM)***
   (a) Process costing
   (b) Operating costing
   (c) Job costing
   (d) None of the above

Ans: (c)

5. **Job Costing is:** ***(SM)***
   (a) Applicable to all industries regardless of the products or services provided
   (b) Technique of costing
   (c) Suitable where similar products are produced on mass scale
   (d) Method of costing used for non- standard and non- repetitive products.

Ans: (d)

6. **The production planning department prepares a list of materials and stores required for the completion of a specific job order, this list is known as: (SM)**
   (a) Bin card
   (b) Bill of material
   (c) Material requisition slip

(d) None of the above

Ans: (b)

7. Batch costing is a type of: *(SM)*

(a) Process costing
(b) Job Costing
(c) Differential costing
(d) Direct costing

Ans: (b)

8. Batch costing is similar to that under job costing except with the difference that a: *(SM)*

(a) Job becomes a cost unit.
(b) Batch becomes the cost unit instead of a job
(c) Process becomes a cost unit
(d) None of the above

Ans: (b)

9. The main points of distinction between job and contract costing includes: *(SM)*

(a) Length of time to complete.
(b) Big jobs
(c) Activities to be done outside the factory area
(d) All of the above

Ans: (d)

10. Economic batch quantity is that size of the batch of production where: *(SM)*

(a) Average cost is minimum
(b) Set-up cost of machine is minimum
(c) Carrying cost is minimum
(d) Both (b) and (c)

Ans: (d)

11. A customer has been ordering 80,000 caps during the year. It is estimated that it costs ₹ 1 as inventory holding cost per cap per month and that the set up cost per run of cap manufacture is ₹ 3,500 What is optimum run size of cap manufacture? *(MTP 2 Marks Mar'24)*

(a) 12 runs
(b) 10 runs
(c) 15 runs
(d) 7 runs

Ans: (a)

12. A FMCG company has an annual demand of 50,000 units for its specific product whose setting up cost per batch is ₹ 10,000 and carrying cost per unit per month is ₹ 1. What is the Economic Batch Quantity? *(MTP 2 Marks July'24)*

(a) 7,071 units
(b) 10,000 units
(c) 12,641 units
(d) 9,129 units

Ans: (d)

13. A company uses batch costing and incurs a setup cost of ₹ 20,000 for a batch of 300 units. If direct materials cost ₹ 20 per unit and direct labor costs ₹ 10 per unit, what is the total cost of the batch? *(MTP 2 Marks Dec'24)*

(a) ₹ 25,000
(b) ₹ 29,000
(c) ₹ 32,000
(d) ₹ 7,000

Ans: (b)

14. Due to technical and economical reasons, F8 Ltd. manufactures in batch. The latest contract requires the company to supply 9,000 bushings per month to G4 Ltd. The company has estimated that each set up for manufacturing the bushings will cost ₹ 16,002.25 and the inventory holding cost per bushing per annum will come to ₹ 60. HOW many runs the company need to make throughout the year to complete the demand? *(MTP 2 Marks Dec'24)*

(a) 5 runs
(b) 10 runs
(c) 15 runs
(d) 20 runs

Ans: (c)

CHAPTER 9: JOB COSTING

CONCEPTS OF THIS CHAPTER	LDR Questions
• Job Costing methods: overview. • Accounting entries for cost elements in Job Costing. • Determine cost for a job.	Q 8 Q 10

QUICK REVIEW OF IMPORTANT CONCEPTS

I. Meaning of Job Costing

Applicable in situations where work is carried out through distinct contracts, jobs, or batches, each authorized by a specific order or contract. Industry examples include printing, furniture, hardware, shipbuilding, heavy machinery, and interior decoration.

II. Process of Job Costing

- Prepare a separate cost sheet for each job
- Disclose cost of materials issued for the job
- Employee costs incurred (on the basis of bill of material and time cards respectively)
- When job is completed, overhead charges are added for ascertaining total expenditure

III. Collection Of Costs for a Job

(i) Materials cost

- Traced to and identified with specific job or work order
- Posted to individual job cost sheets or cards in the work-inprogress ledger
- If the surplus material is utilised on some other job, instead of being returned to the stores first, a material transfer note is prepared.

(ii) Labour cost

- Booked against specific jobs in the job time cards or sheets
- Posted to the appropriate job cost card or sheet in workin-progress ledger

(iii) Overheads

- Manufacturing overheads are collected under suitable standing order numbers
- Selling and distribution overheads are collected against cost accounts numbers
- Total overhead expenses are apportioned to service and production departments on some suitable basis.
- The expenses of service departments are finally transferred to production departments.
- The total production overhead is then applied to products on some realistic basis.

Questions & Answers

Theory Questions

Question 1

Explain very briefly the following terms: Job Costing ***(PYP 1 Mark, Nov'23 & May '18)***

Answer 1

Job Costing: Job costing is the method of costing required to be done for unique products manufactured done against specific orders. In this method of costing, cost of each job is ascertained separately.

Question 2

Define Job costing and explain differences between job and batch Costing. ***(PYP 4 Marks Sep'24)***

Answer 2

Job Costing is defined as "the category of basic costing methods which is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract." According to this method, costs are collected and accumulated according to jobs, contracts, products or work orders. Each job or unit of production is treated as aseparate entity for the purpose of costing.

Difference between job and batch costing

Sr. No.	Job Costing	Batch Costing
1.	Method of costing used fornon- standard and non-repetitive products produced as per customer specificationsand against specific orders.	Homogeneous products produced in a continuous production flow in lots.
2.	Cost determined for each Job	Cost determined in aggregate for the entire Batch and then arrived aton per unit basis.
3.	Jobs are different from each other and independent of each other. Each Job is unique.	Products produced in a batch are homogeneous and lack of individuality

Question 3

Distinguish between Job costing and Process Costing. (Any five points of differences)
(PYP 5 Marks, May'22 SM, MTP 5 Marks, Oct '23)

Answer 3

The main point which distinguish job costing and process costing are as below:

	Job Costing	Process Costing
(i)	A Job is carried out or a product is produced by specific orders.	The process of producing the product has a continuous flow and the product produced is homogeneous.
(ii)	Costs are determined for each job.	Costs are compiled on time basis i.e., for production of a given accounting period for each process or department.
(iii)	Each job is separate and independent of other jobs.	Products lose their individual identity as they are manufactured in a continuous flow.
(iv)	Each job or order has a number and costs are collected against the same job number.	The unit cost of process is an average cost for the period.
(v)	Costs are computed when a job is completed. The cost of a job may be determined by adding all costs against the job.	Costs are calculated at the end of the cost period. The unit cost of a process may be computed by dividing the total cost for the period by the output of the process during that period.
(vi)	As production is not continuous and each job may be different, so more managerial attention is required for effective control.	Process of production is usually standardized and is therefore, quite stable. Hence control here is comparatively easier.

Exam insights: This theory question was based on distinguish between Job costing and Process costing. Most of the examinees did not answer on the correct line. Performance of the examinees was poor.

Practical Questions

Question 4

A Ltd. is an engineering manufacturing company producing job orders on the basis of specifications provided by the customers. During the last month it has completed three jobs namely A, B and C. The following are the items of expenditures which are incurred in addition to direct materials and direct employee cost:

(i) Office and administration cost - Rs. 6,00,000
(ii) Product blueprint cost for job A - Rs. 2,80,000
(iii) Hire charges paid for machinery used in job work B - Rs. 80,000
(iv) Salary to office attendants - Rs. 1,00,000
(v) One time license fee paid for software used to make computerized graphics for job C – Rs. 1,00,000.
(vi) Salary paid to marketing manager - Rs. 2,40,000.

Required:

CALCULATE direct expenses attributable to each job. *(MTP 5 Marks, Mar'21)*

Answer 4

Calculation of Direct expenses

Particulars	Job A (Rs.)	Job B (Rs.)	Job C (Rs.)
Product blueprint cost	2,80,000	--	--
Hire charges paid for machinery	--	80,000	--
License fee paid for software	--	--	1,00,000
Total Direct expenses	**2,80,000**	**80,000**	**1,00,000**

Question 5

KJ Motors Ltd. is a manufacturer of auto components. Following are the details of expenses for the year 2020-21:

		(₹)
(i)	Opening Stock of Material	15,00,000
(ii)	Closing Stock of Material	20,00,000
(iii)	Purchase of Material	1,80,50,000
(iv)	Direct Labour	90,50,000
(v)	Factory Overhead	30,80,000
(vi)	Administrative Overhead	20,50,400

During the FY 2021-22, the company has received an order from a car manufacturer where it estimates that the cost of material and labour will be ₹ 80,00,000 and ₹ 40,50,000 respectively. The company charges factory overhead as a percentage of direct labour and administrative overheads as a percentage of factory cost based on previous year's cost. Cost of delivery of the components at customer's premises is estimated at ₹ 9,50,000.

You are required to:

(i) CALCULATE the overhead recovery rates based on actual costs for 2020-21.

(ii) PREPARE a Job cost sheet for the order received and the price to be quoted if the desired profit is 25% on sales. *(RTP May'21, May '22 & Nov '23)*

Answer 5

(i) Calculation of Overhead Recovery Rate:

Factory Overhead Recovery Rate	$= \frac{\text{Factory Overhead in 2020–21}}{\text{Direct labour Cost in 2020–21}} \times 100$
	$= \frac{\text{Rs.30,80,000}}{\text{Ra.90,50,000}}$ X 100 = 34 % of Direct labour
Administrative Overhead Recovery Rate	$= \frac{\text{Administrative Overhead in 2020–21}}{\text{Factory Cost in 2020–21 (W.N.)}} \times 100$
	$= \frac{\text{Rs.20,50,400}}{\text{Rs.2,96,80,000}} \times 100$ = 6.91 % of Factory Cost

Working Note: Calculation of Factory Cost in 2020-21

Particulars	Amount (₹)
Opening Stock of Material	15,00,000
Add: Purchase of Material	1,80,50,000
Less: Closing Stock of Material	(20,00,000)
Material Consumed	1,75,50,000
Direct Labour	90,50,000
Prime Cost	2,66,00,000
Factory Overhead	30,80,000
Factory Cost	2,96,80,000

(ii) Job Cost Sheet for the order received in 2021-22

Particulars	Amount (₹)
Material	80,00,000
Labour	40,50,000
Factory Overhead (34% of ₹ 40,50,000)	13,77,000
Factory Cost	1,34,27,000
Administrative Overhead (6.91% of ₹ 1,34,27,000)	9,27,806
Cost of delivery	9,50,000
Total Cost	1,53,04,806
Add: Profit @ 25% of Sales or 33.33% of cost	51,01,602
Sales value (Price to be quoted for the order)	2,04,06,408

Hence the price to be quoted is ₹ 2,04,06,408.

Question 6

S & Sons, an unregistered supplier under GST, purchases material from V Ltd. which is a GST registered supplier. The following information is available for one lot of 5,000 units of material purchased:

Listed price of one lot	**₹ 5,00,000**
Trade discount	**@ 10% on listed price**
CGST and SGST (Credit Not available)	**18% (9% CGST + 9% SGST)**
Cash discount (Will be given only if payment is made within 30 days.)	**@ 10%**
Toll Tax paid	**₹ 1,800**
Freight and Insurance	**₹ 36,000**
Demurrage paid to transporter	**₹ 5,000**
Commission and brokerage on purchases	**₹ 10,000**
Amount deposited for returnable containers	**₹ 30,000**
Amount of refund on returning the container	**₹ 26,000**
Other Expenses of material shortage is due to normal reasons.	**@ 2% of total cost 5%**
The payment to the supplier was made within 21 days of the purchases.	

You are required to calculate cost per unit of material purchased by S & Sons. ***(MTP 5 Marks Mar'24 RTP May '22, SM) (Same concept different figures MTP 5 Marks March '22 & Sep '23)***

Answer 6

Calculation of cost per unit:

Particulars	Units	(₹)
Listed Price of Materials	5,000	5,00,000
Less: Trade discount @ 10% on invoice price		(50,000)
		4,50,000
Add: GST @18% of ₹ 4,50,000		81,000

			5,31,000
Add:	Toll Tax		1,800
Freight and Insurance			36,000
Commission and Brokerage Paid			10,000
Add: Cost of returnable containers:			
Amount deposited	₹ 30,000		
Less: Amount refunded	₹ 26,000		4,000
			5,82,800
Add: Other Expenses @ 2% of Total Cost $\left(\frac{5,82,800}{98} \times 2\right)$			11,894
Total cost of material			5,94,694
Less: Shortage material due to normal reasons @ 5%		250	-
Total cost of material of good units		4,750	5,94,694
Cost per unit (₹ 5,94,694/4,750 units)			125.20

Note:

1. GST is payable on net price i.e., listed price less discount.
2. GST paid on purchase is added with cost as ITC on GST cannot be claimed
3. Cash discount is treated as interest and finance item; hence it is ignored.
4. Demurrage is penalty imposed by the transporter for delay in uploading or off-loading of materials. It is an abnormal cost and not included.
5. Shortage due to normal reasons should not be deducted from cost to ascertain total cost of good units.

Question 7

A job can be executed either through workman A or B. A takes 32 hours to complete the job while B finishes it in 30 hours. The standard time to finish the job is 40 hours.
The hourly wage rate is same for both the workers. In addition workman A is entitled to receive bonus according to Halsey plan (50%) sharing while B is paid bonus as per Rowan plan. The works overheads are absorbed on the job at ₹ 7.50 per labour hour worked. The factory cost of the job comes to ₹ 2,200 irrespective of the workman engaged. FIND out the hourly wage rate and cost of raw materials input. Also SHOW cost against each element of cost included in factory cost. ***(MTP 4 Marks July'24)***

Answer 7

Calculation of:

(i) Time saved and wages:

Workmen	A	B
Standard time (hrs.)	40	40
Actual time taken (hrs.)	32	30
Time saved (hrs.)	08	10
Wages paid @ ₹ x per hr. (₹)	32x	30x

(ii) Bonus Plan:

	Halsey	Rowan
Time saved (hrs.)	8	10
Bonus (₹)	4x	7.5x
	$\left[\frac{8 \text{ hrs} \times ₹ x}{2}\right]$	$\left[\frac{10\ hrs \times 30 hrs \times ₹ x}{40\ hrs}\right]$

(iii) Total wages:

Workman A: 32x + 4x = ₹ 36x

Workman B: 30x + 7.5x = ₹ 37.5x

Statement of factory cost of the job

Workmen	A	B
	₹	₹
Material cost (assumed)	y	y

Wages (shown above)	36x	37.5x
Works overhead	240	225
Factory cost (given)	2,200	2,200

The above relations can be written as follows:

(i) $36x + y + 240 = 2,200$

(ii) $37.5x + y + 225 = 2,200$

Subtracting (i) from (ii) we get $1.5x - 15 = 0$

or $1.5\ x = 15$

or x= ₹ 10 per hour

On substituting the value of x in (i) we get y = ₹ 1,600

Hence the wage rate per hour is ₹ 10 and the cost of raw material is ₹ 1,600 on the job.

Question 8

LDR

MT Ltd. pays the followings to skilled workers engaged in production works. The following are the employee benefits paid to the employees:

(a)	Basic salary per day	₹1,000
(b)	Dearness allowance (DA)	20% of basic salary
(c)	House rent allowance	16% of basic salary
(d)	Transport allowance	₹50 per day of actual work
(e)	Overtime	Twice the hourly rate (considers basic and DA), only if works more than 9 hours a day otherwise no overtime allowance. If works for more than 9 hours a day then overtime is considered after 8th hours.
(f)	Work of holiday and Sunday	Double of per day basic rate provided works at least 4 hours. The holiday and Sunday basic is eligible for all allowances and statutory deductions.
(h)	Earned leave & Casual leave	These are paid leave.
(h)	Employer's contribution to Provident fund	12% of basic and DA
(i)	Employer's contribution to Pension fund	7% of basic and DA

The company normally works 8-hour a day and 26-day in a month. The company provides 30 minutes lunch break in between.

During the month of August 2020, Mr. Z works for 23 days including 15th August and a Sunday and applied for 3 days of casual leave. On 15th August and Sunday he worked for 5 and 6 hours respectively without lunch break.

On 5th and 13th August he worked for 10 and 9 hours respectively.

During the month Mr. Z worked for 100 hours on Job no.HT200.

You are required to CALCULATE:

(i) Earnings per day

(ii) Effective wages rate per hour of Mr. Z.

(iii) Wages to be charged to Job no.HT200 ***(MTP 10 Marks, Apr'23)***

Answer 8

Workings:

1. Normal working hours in a month = (Daily working hours – lunch break) × no. of days
   = (8 hours – 0.5 hours) × 26 days = 195 hours
2. Hours worked by Mr.Z = No. of normal days worked + Overtime + holiday/ Sunday worked
   = (21 days × 7.5 hours) + (9.5 hours + 8.5 hours) + (5 hours + 6 hours)
   = 157.5 hours + 18 hours + 11 hours = 186.50 hours.

(i) Calculation of earnings per day

Particulars	Amount (₹)
Basic salary (₹1,000 × 26 days)	26,000
Dearness allowance (20% of basic salary)	5,200

	31,200
House rent allowance (16% of basic salary)	4,160
Employer's contribution to Provident fund (12% × ₹31,200)	3,744
Employer's contribution to Pension fund (7% × ₹31,200)	2,184
	41,288
No. of working days in a month (days)	26
Rate per day	1,588
Transport allowance per day	50
Earnings per day	**1,638**

(ii) Calculation of effective wage rate per hour of Mr. Z:

Particulars	**Amount (₹)**
Basic salary (₹1,000 × 26 days)	26,000
Additional basic salary for Sunday & holiday (₹1,000 × 2 days)	2,000
Dearness allowance (20% of basic salary)	5,600
	33,600
House rent allowance (16% of basic salary)	4,480
Transport allowance (₹50 × 23 days)	1,150
Overtime allowance (₹160 × 2 × 2 hours)*	640
Employer's contribution to Provident fund (12% × ₹33,600)	4,032
Employer's contribution to Pension fund (7% × ₹33,600)	2,352
Total monthly wages	46,254
Hours worked by Mr. Z (hours)	186.5
Effective wage rate per hour	**248**

*(Daily Basic + DA) ÷ 7.5 hours

= (1,000+200) ÷ 7.5 = ₹₹160 per hour

(iii) **Calculation of wages to be charged to Job no. HT200** = ₹248 × 100 hours = ₹24,800

Exam insights: This numerical question was based on various aspects of Contract Costing Most of the examinees were able to solve the problem correctly. The overall performance of the examinees was above average.

Question 9

(Includes concepts of Overhead- Absorption Costing Method)

The following are the budgeted details are available from the records of a manufacturing company SP Ltd.:

	₹	₹
Direct Materials		2,13,000
Direct Wages:		
Machine Shop (12,000 hours)	63,000	
Assembly Shop (10,000 hours)	48,000	1,11,000
Works Overhead:		
Machine Shop	88,200	
Assembly Shop	51,800	1,40,000
Administrative Overhead		92,800
Selling Overhead		81,000
Distribution Overhead		62,100

You are required to:

(a) PREPARE a Schedule of Overhead Rates from the figures available stating the basis of overhead

recovery rates used under the given circumstances.

(b) WORK OUT a Cost Estimate for the following job based on overhead calculated on above basis.

Direct Material:	25 kg @ ₹ 17.20/kg
	15 kg @ ₹ 21.00/kg
Direct labour: (On the basis of hourly rate	Machine shop 30 hours
For machine shop and assembly shop)	Assembly shop 42 hours

(MTP 8 Marks, Apr'24)

Answer 9

(a) Job Cost Sheet for the period...

			₹
Direct materials			2,13,000
Direct wages:			
Machine shop		63,000	
Assembly shop		48,000	1,11,000
	Prime Cost		3,24,000
Works overhead:			
Machine shop		88,200	
Assembly shop		51,800	1,40,000
	Work Cost		4,64,000
Administration overhead			92,800
	Cost of Production		5,56,800
Selling overhead			81,000
Distribution overhead			62,100
	Total Cost		6,99,900

Schedule of Overhead Rate

(i) Works Overhead: Hourly rate = (Overhead amount ÷ Hours)

Machine shop = (88,200 ÷ 12,000) = ₹ 7.35 per hour

Assembly shop = (51,800 ÷ 10,000) = ₹ 5.18 per hour

(ii) Administrative Overhead as a % of works cost

$$= \frac{92,800}{4,64,000} \times 100 = 20\%$$

(iii) Selling and distribution overhead as % of works cost

$$= \frac{81,000 + 62,100}{4,64,000} \times 100 = 30.84\%$$

Labour hour rates are calculated as under:

Machine shop = ₹ 63,000 ÷ 12,000 hrs. = ₹ 5.25

Assembly shop = ₹ 48,000÷10,000 hrs. = ₹ 4.80

(b) Cost Estimate for Job

Direct Materials	₹	₹
(i) 25 kg @ ₹ 17.20 per kg	430	
(ii) 15 kg @ ₹ 21 per kg	315	745.00
Direct Labour		
Machine shop (30 hrs. @ ₹ 5.25)	157.50	
Assembly shop (42 hrs. @ ₹ 4.80)	201.60	359.10
Prime Cost		1104.10
Works Overhead		
Machine shop (30 hours @ ₹ 7.35)	220.50	
Assembly shop (42 hours @ ₹ 5.18)	217.56	438.06
Works Cost		1542.16
Administration overhead (20% of works cost)		308.43
Cost of Production		1850.59

Selling and distribution cost (30.84% of works cost)		475.60
Total Estimated Cost		2326.19

Question 10

LDR

Allurgy Ltd. is into metallic tools manufacturing. It has four production departments. The work performed in every department is fairly uniform, thus the manager of the company created a policy to recover the production overheads of the entire company by adopting a single blanket rate.

The relevant data for a month are given below:

Departments	DirectMaterials (₹)	DirectWages (₹)	Factory Overheads (₹)	DirectLabourHours	MachineHours
Budget:					
Operating	64,35,000	7,92,000	35,64,000	1,98,000	7,92,000
Assembly	11,73,000	24,15,000	9,66,000	6,90,000	69,000
Quality Control	5,10,000	10,50,000	4,20,000	3,00,000	30,000
Packing	9,90,000	6,93,000	12,37,500	4,95,000	-
Actual:	-	-	-	-	-
Operating	77,22,000	9,50,400	38,61,000	2,37,600	9,50,400
Assembly	9,38,400	18,63,000	5,79,600	6,21,000	75,900
Quality Control	4,08,000	8,10,000	2,52,000	2,70,000	33,000
Packing	11,88,000	8,91,000	13,36,500	5,94,000	-

Additional details relating to one of the jobs during the month are also provided below:

Job No. 157

Departments	DirectMaterials (₹)	DirectWages (₹)	DirectLabour Hours	Machine Hours
Operating	11,880	2,376	594	1,782
Assembly	4,140	2,484	828	207
Quality Control	1,800	1,080	360	90
Packing	2,970	594	396	-

During Quality Control phase of this particular Job, the company incurred certain additional expenditure of ₹ 495 on direct wages as there were certain production that was not as perfect as the saleable product. The defective units were normal in nature and after rectification have been brought to the required degree of perfection.

The company adds 25% on the factory cost to cover administration overheads and profit.

You are required to figure out the following:

(a) COMPUTE the overhead absorption rate as per the blanket rate based on the percentage of total factory overheads to total factory wages and determine the selling price of the Job No. 157.

(b) The new manager thinks that the machinery is used to a varying degree in the different departments. Thus, it is not appropriate to follow one blanket rate for the whole company. Therefore, suggest an alternative method of absorption of the factory overheads and CALCULATE the overhead rates based on the method so suggested. (4 Marks)

(c) DETERMINE the selling price of Job 157 based on the overhead rates calculated in (b) above. (3 Marks)

(d) CALCULATE the department-wise under or over recovery of overheads based on the company's current policy and the method suggested in (b) above. ***(MTP 4 Marks Aug'24)***

Answer 10

Computation of overhead absorption rate
(as per the blanket rate)

Department	Budgeted factory Overheads (₹)	Budgeted direct wages (₹)
Operating	35,64,000	7,92,000
Assembly	9,66,000	24,15,000

Quality Control	4,20,000	10,50,000
Packing	12,37,500	6,93,000
Total	**61,87,500**	**49,50,000**

Overhead absorption rate = $\frac{\text{Budgeted factory Overheads}}{\text{Budgeted direct wages}} \times 100 = \frac{61,87,500}{49,50,000} \times 100$

= 125% of Direct wages

Selling Price of the Job No. 157

Particulars	Operating (₹)	Assembly (₹)	Quality Control (₹)	Packing (₹)	Total (₹)
Direct Materials	11,880	4,140	1,800	2,970	20,790
Direct Wages	2,376	2,484	1,080	594	6,534
Rectification cost of normal defectives			495		495
Overheads [(125% x (6,534 + 495)]					8,786.25
Total Factory Cost					**36,605.25**
Add: Mark-up (25% x ₹ 36,605.25)					9,151.31
Selling Price					**45,756.56**

(b) As the machinery is used to a varying degree in different departments, the use of **departmental rates** is preferred. The overhead recovery rates in different departments would be as follows:

a. **Operating Department:** The use of machine hours is the predominant factor of production in Operating Department. Hence, machine hour rate should be used to recover overheads.
The overhead recovery rate based on machine hours would becalculated as follows:

Machine hour rate = $\frac{\text{Budgeted factory Overheads}}{\text{Budgeted machine hours}} = \frac{₹\,35,64,000}{7,92,000} = ₹\,4.50$ per hour

b. **Assembly Department:** Direct labour hours is the main factor of production in Assembly Department. Hence, direct labour hour rate should be used to recover overheads.
The overhead recovery rate based on direct labour hours would be calculated as follows:

Direct labour hour rate = $\frac{\text{Budgeted factory Overheads}}{\text{Budgeted direct labour hours}} = \frac{₹\,9,66,000}{6,90,000} = ₹\,1.40$ per hour

c. **Quality Control Department:** Direct labour hours is the main factor of production in Quality Control Department. Hence, direct labour hour rate should be used to recover overheads.
The overhead recovery rate based on direct labour hours would be calculated as follows:

Direct labour hour rate = $\frac{\text{Budgeted factory Overheads}}{\text{Budgeted direct labour hours}} = \frac{₹\,4,20,000}{3,00,000} = ₹\,1.40$ per hour

d. **Packing Department:** Direct labour hours is the main factor of production in Packing Department. Hence, direct labour hour rate should be used to recover overheads.
The overhead recovery rate based on direct labour hours would be calculated as follows:

Direct labour hour rate = $\frac{\text{Budgeted factory Overheads}}{\text{Budgeted direct labour hours}} = \frac{₹\,12,37,500}{4,95,000} = ₹\,2.50$ per hour

(c) Selling Price of Job No. 157

[based on the overhead rates calculated in (b) above]

Particulars	Operating (₹)	Assembly (₹)	QualityControl (₹)	Packing (₹)	Total (₹)
Direct Materials	11,880	4,140	1,800	2,970	20,790
Direct Wages	2,376	2,484	1,080	594	6,534
Rectification costof normal defectives			495		495
Overheads (refer working note)					10,672
Total Factory Cost					**38,491**
Add: Mark-up (25% x ₹38,491)					9,622.75
Selling Price					**48,113.75**

Working note:

Overhead Statement

Department	Basis	Hours	Rate (₹)	Overheads (₹)
Operating	Machine hour	1,782	4.50	8,019
Assembly	Direct labour hour	828	1.40	1,159
Quality Control	Direct labour hour	360	1.40	504
Packing	Direct labour hour	396	2.50	990
			Total	**10,672**

(d) Department-wise statement of under or over recovery of overheads

a. As per the current policy

Particulars	Operating (₹)	Assembly (₹)	QualityControl (₹)	Packing (₹)	Total (₹)
Direct wages(Actual)	9,50,400	18,63,000	8,10,000	8,91,000	45,14,400
Overheads recovered @ 125%of Direct wages: (A)	11,88,000	23,28,750	10,12,500	11,13,750	56,43,000
Actual overheads:(B)	38,61,000	5,79,600	2,52,000	13,36,500	60,29,100
(Under)/Over recovery of overheads: (A–B)	**(26,73,000)**	**17,49,150**	**7,60,500**	**(2,22,750)**	**(3,86,100)**

b. As per the method suggested

	Machine hours (Operating)	Direct labour hours (Assembly)	Direct labour hours (Quality Control)	Directlabour hours(Packing)	Total (₹)
Hours worked	9,50,400	6,21,000	2,70,000	5,94,000	
Rate/hour (₹)	4.50	1.40	1.40	2.50	
Overhead recovered (₹): (A)	42,76,800	8,69,400	3,78,000	14,85,000	70,09,200
Actual overheads(₹): (B)	38,61,000	5,79,600	2,52,000	13,36,500	60,29,100
(Under)/Over recovery: (A- B)	**4,15,800**	**2,89,800**	**1,26,000**	**1,48,500**	**9,80,100**

Multiple Choice Questions (MCQ)

1. **In case product produced or jobs undertaken are of diverse nature, the system of costing to be used should be:** ***(SM)***
   (a) Process costing
   (b) Operating cost
   (c) Job costing
   (d) None of the above

Ans: (c)

2. **The production planning department prepares a list of materials and stores required for the completion of a specific job order, this list is known as:** ***(SM)***
   (a) Bin card
   (b) Bill of material
   (c) Material requisition slip
   (d) None of the above

Ans: (b)

3. **Job costing is similar to that under Batch costing except with the difference that a:** ***(SM)***
   (a) Job becomes a cost unit.
   (b) Batch becomes the cost unit instead of a job
   (c) Process becomes a cost unit
   (d) None of the above.

Ans: (a)

4. **In job costing which of the following documents are used to record the issue of direct material to a job:** ***(SM)***
   (a) Goods received note
   (b) Material requisition
   (c) Purchase order
   (d) Purchase requisition

Ans: (b)

5. **The most suitable cost system where the products differ in type of materials and work performed is :** ***(SM)***
   (a) Job Costing
   (b) Process Costing
   (c) Operating Costing
   (d) None of these.

Ans: (a)

6. **Which of the following statements is true:** ***(SM)***
   (a) Job cost sheet may be used for estimating profit of jobs.
   (b) Job costing cannot be used in conjunction with marginal costing.
   (c) In cost plus contracts, the contractor runs a risk of incurring a loss.
   (d) None of these.

Ans: (a)

7. **Which of the following statements is true:** ***(SM)***
   (a) Job cost sheet may be prepared for facilitating routing and scheduling of the job
   (b) Job costing can be suitably used for concerns producing uniformly any specific product
   (c) Job costing cannot be used in companies using standard costing
   (d) Neither (a) nor (b) nor (c)

Ans: (d)

8. **ABC Manufacturing allocates its factory overhead costs based on machine hours. The total estimated overhead cost for the year is ₹ 6,00,000, and the company expects to use 30,000 machine hours. During the year, job A used 300 machine hours. What amount of overhead costs should be allocated to this job?** ***(MTP 2 Marks Dec'24)***
   (a) ₹ 4,000
   (b) ₹ 6,000
   (c) ₹10,000
   (d) ₹8,000

Ans: (b)