



MATERIALS COST

Q.6. RST Limited has received an offer of quantity discount on its order of materials as under:

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Price per tonne	Tones number
₹9,600	Less than 50
₹9,360	50 and less than 100
₹9,120	100 and less than 200
₹8,880	200 and less than 300
₹8,640	300 and above

The annual requirement for the material is 500 tonnes. The ordering cost per order is ₹12,500 and the stock holding cost is estimated at 25% of the material cost per annum.

Required:

- Compute the most economical purchase level.
- Compute EOQ if there are no quantity discounts and the price per tonne is ₹10,500.

Q.9. DSM Ltd manufactures speed boats which require propeller TP-M4. The following particulars are collected for the year 2023-24:

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- Annual demand of TP-M4 12,000 units
- Cost of placing an order 1,200 per order
- Cost per unit of TP-M4 is 1,740/-
- Carrying cost p.a. 12%

The company has been offered a quantity discount of 5 % on the purchase of TP-M4, provided the order size is 6,000 units at a time.

Required to:

- COMPUTE the economic order quantity (EOQ)
- ADVISE whether the quantity discount offer can be accepted.

Q.10. Reliable India Pvt Ltd is a startup company engaged in manufacturing of Agro Tech product from a raw material, which is purchased at ₹190 per kg. The company incurs a handling cost of ₹1,470 plus, freight of ₹770 per order. The incremental carrying cost of inventory of raw material is ₹3 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is ₹20 per kg per annum. The annual production of the product is 1,50,000 units and 3 units are obtained from one kg. of raw material. Assume 360 days in a year.

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Required:

- Calculate the economic order quantity of raw materials.
- Determine, how frequently company should order for procurement be placed.
- 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?

- Q.13.** A company manufactures 10,000 units of a product per month. The cost of placing an order is Rs. 200. The purchase price of the raw material is Rs. 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.

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You are required to CALCULATE:

- Re-order quantity
- Re-order level
- Maximum level
- Minimum level
- Average stock level

- Q.18.** ZED Company supplies plastic crockery to fast food restaurants in metropolitan city.

One of its products is a special bowl, disposable after initial use, for serving soups to its customers. Bowls are sold in pack 10 pieces at a price of ₹50 per pack. The demand for plastic bowl has been forecasted at a fairly steady rate of 40,000 packs every year. The company purchases the bowl direct from manufacturer at ₹40 per pack within a three days' lead time. The ordering and related cost is ₹8/-per order. The storage cost is 10% per cent per annum of average inventory investment.

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Required:

- Calculate Economic Order Quantity.
- Calculate number of orders needed every year.
- Calculate the total cost of ordering and storage bowls for the year.
- Determine when should the next order to be placed. (Assuming that

- Q.19.** A company uses four raw materials A, B, C and D for a particular product for which the following data apply :-

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Raw Material	Usage per unit of product (Kg.)	Re-order Quantity (Kg.)	Price per Kg. (₹)	Delivery period (in weeks)			Reorder level (Kg.)	Minimum level
				Minimum	Average	Maximum		
A	12	12,000	12	2	3	4	60,000	?
B	12	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:-

- Minimum Stock of A?
- Maximum Stock of B?
- Re-order level of C?
- Average stock level of A?
- Re-order level of D?



Q.27. HBL Limited produces product 'M' which has a quarterly demand of 20,000 units. Each product requires 3 kg. and 4 kg. of material X and Y respectively. Material X is supplied by a local supplier and can be procured at factory stores at any time, hence, no need to keep inventory for material X. The material Y is not locally available, it requires to be purchased from other states in a specially designed truck container with a capacity of 10 tons.

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The cost and other information related with the materials are as follows:

Particulars	Material-X	Material-Y
Purchase price per kg. (excluding GST)	₹140	₹640
Rate of GST	18%	18%
Freight per trip (fixed, irrespective of quantity)	-	₹28,000
Loss of materials in transit*	-	2%
Loss in process*	4%	5%

*On purchased quantity

Other information:

- The company has to pay 15% p.a. to bank for cash credit facility.
- Input credit is available on GST paid on materials.

Required:

- CALCULATE cost per kg. of material X and Y
- CALCULATE the Economic Order quantity for both the materials.



Q.28. A Ltd. manufactures a product X which requires two raw materials A and B in a ratio of 1:4. The sales department has estimated a demand of 5,00,000 units for the product for the year.

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To produce one unit of finished product, 4 units of material A is required.

Stock position at the beginning of the year is as below:

Product- X 12,000 units

Material A 24,000 units

Material B 52,000 units

To place an order the company has to spend Rs.15,000. The company is financing its working

capital using a bank cash credit @13% p.a.

Product X is sold at Rs.1,040 per unit. Material A and B are purchased at Rs.150 and Rs.200 respectively.

Required:

COMPUTE economic order quantity (EOQ):

- If purchase order for the both materials is placed separately.
- If purchase order for the both materials is not placed separately.



Q.30. IPL Limited uses a small casting in one of its finished products. The castings are purchased from a foundry. IPL Limited purchases 54,000 castings per year at a cost of ₹800 per casting. The castings are used evenly throughout the year in the production process on a 360-day-per-year basis. The company estimates that it costs ₹9,000 to place a single purchase order and about ₹300 to carry one casting in inventory for a year. The high carrying costs result from the need to keep the castings in carefully controlled temperature and humidity conditions, and from the high cost of insurance.

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Delivery from the foundry generally takes 6 days, but it can take as much as 10 days. The days of delivery time and percentage of their occurrence are shown in the following tabulation:

Delivery time (days)	6	7	8	9	10
Percentage of occurrence	75	10	5	5	5

Required:

- Compute the economic order quantity (EOQ).
- Assume the company is willing to assume a 15% risk of being out of stock. What would be the safety stock? The re-order point?
- Assume the company is willing to assume a 5% risk of being out of stock. What would be the safety stock? The re-order point?
- Assume 5% stock-out risk. What would be the total cost of ordering and carrying inventory for one year?
- Refer to the original data. Assume that using process re-engineering the company reduces its cost of placing a purchase order to only ₹600. In addition, company estimates that when the waste and inefficiency caused by inventories are considered, the true cost of carrying a unit in stock is ₹720 per year.
 - Compute the new EOQ.
 - How frequently would the company be placing an order, as compared to the old purchasing policy?

Q.37. SKY Company Ltd., not registered under GST, purchased material 'RPP' from a company, registered under GST. The following information is available for one lot of 5,000 units of material purchased:



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Listed price of one lot	₹ 7,50,000
Trade discount	@ 10% on Listed price.
CGST and SGST (Credit Not available)	12% (6% CGST + 6% SGST)
Road Tax paid	₹ 15,000
Freight and Insurance	₹ 51,000
Detention Charges	₹ 15,000
Commission and brokerage on purchases	₹ 30,000
Amount deposited for returnable containers	₹ 90,000
Amount of refund on returning the container	₹ 60,000
Other Expenses	@ 2% of total cost

20% of material shortage is due to normal reasons.

You are required to CALCULATE cost per unit of material purchased to SKY Company Ltd.

Q.42 Banerjee Brothers (BB) supplies surgical gloves to nursing homes and polyclinics in the city. These surgical gloves are sold in pack of 10 pairs at price of ₹ 250 per pack. For the month of April 2018, it has been anticipated that a demand for 60,000 packs of surgical gloves will arise. BB purchases these gloves from the manufacturer at ₹ 228 per pack within a 4 to 6 days' lead time. The ordering and related cost is ₹ 240 per order. The storage cost is 10% p.a. of average inventory investment.



Required:

- (i) Calculate the Economic Order Quantity (EOQ)
- (ii) Calculate the number of orders needed every year
- (iii) Calculate the total cost of ordering and storage of the surgical gloves.
- (iv) Determine when should the next order to be placed. (Assuming that the company does maintain a safety stock and that the present inventory level is 10,033 packs with a year of 360 working days).

Q.45 ARS Limited produces the component from a single raw material in economic lots (EOQ) of 2,800 units at a cost of ₹ 8.00 per unit. Average annual demand of the component is 28,000 units. The annual holding and carrying cost is ₹ 0.25 per unit and minimum stock level is set at 450 units.



You are required to calculate:

- (i) Ordering cost per order.
- (ii) Average stock level.
- (iii) Number of orders.
- (iv) If the company plans to reduce the number of orders calculated in (iii) above by 2, by this change, to what extent will the economic order quantity and the ordering cost per order be increased?



EMPLOYEE COSTS & DIRECT EXPENSES



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Q.10. A skilled worker in XYZ Ltd. is paid a guaranteed wage rate of ₹30 per hour. The standard time per unit for a particular product is 4 hours. Mr. P, 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%)?



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Q.11. Mr. X had been allotted a work which had to be completed within 80 hours. He took 74 hours to complete the work. The company pays incentive bonus of 10% on the hourly rate if standard time is achieved and a further incentive bonus of 2% on the hourly rate for each 1% in excess of 100% efficiency is payable. The normal wage rate is ₹7.30 per hour. Calculate the effective wage rate per hour worked and total wages to be paid to Mr. X.



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Q.17. 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
Production in units			
- Product - X	210	--	60
- 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:

- Guaranteed hourly rate basis
- Piece work earning basis, but guaranteed at 75% of basic pay
(Guaranteed hourly rate if his earnings are less than 50% of basic pay.)
- Premium bonus basis where the worker received bonus based on Rowan scheme.

Q.19. ZED Limited is working by employing 50 skilled workers, it is considering the introduction of incentive scheme-either Halsey scheme (with 50% bonus) or Rowan scheme of wage payment for increasing the labour productivity to cope up the increasing demand for the product by 40%. It is believed that proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers; it could act as sufficient incentive for them to produce more.



Because of assurance, the increase in productivity has been observed as revealed by the figures for the month of April, 2014.

Hourly rate of wages (guaranteed)	₹30
Average time for producing one unit by one worker at the previous performance (This may be taken as time allowed)	1.975 hours
Number of working days in the month	24
Number of working hours per day of each worker	8
Actual production during the month	6,120 units

Required:

- Calculate the effective rate of earnings under the Halsey scheme and the Rowan scheme.
- Calculate the savings to the ZED Limited in terms of direct labour cost per piece.
- Advise ZED Limited about the selection of the scheme to fulfill their assurance.

Q.20. The finishing shop of a company employs 60 direct workers. Each worker is paid ₹400 as wages per week of 40 hours. When necessary, overtime is worked up to a maximum of 15 hours per week per worker at time rate plus one-half as premium. The current output on an average is 6 units per man hour which may be regarded as standard output. If bonus scheme is introduced, it is expected that the output will increase to 8 units per man hour. The workers will, if necessary, continue to work overtime up to the specified limit although no premium on incentives will be paid.



The company is considering introduction of either Halsey Scheme or Rowan Scheme of wages incentive system. The budgeted weekly output is 19,200 units. The selling price is ₹11 per unit and the direct material cost is ₹8 per unit. The variable overheads amount to ₹0.50 per direct labour hour and the fixed overhead is ₹9,000 per week.

Prepare a statement to show the effect on the company's weekly profit of the proposal to introduce (a) Halsey Scheme, and (b) Rowan Scheme

Q.26. Both direct and indirect employees of a department in a factory are entitled to production bonus in accordance with a group incentive scheme, the outline of which is as follows:

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- (a) For any production in excess of the standard rate fixed at 16,800 tons per month (of 28 days) a general incentive of ₹1,500 per ton is paid in aggregate. The total amount payable to each separate group is determined on the basis of an assumed percentage of such excess production being contributed by it, namely @ 65% by direct employee, @ 15% by inspection staff, @ 12% by maintenance staff and @ 8% by supervisory staff.
- (b) Moreover, if the excess production is more than 20% above the standard, direct employees also get a special bonus @ ₹500 per ton for all production in excess of 120% of standard.
- (c) Inspection staff are penalized @ ₹2,000 per ton for rejection by customer in excess of 2% of production.
- (d) Maintenance staff are also penalized @ ₹2,000 per hour for breakdown.

From the following particulars for a month, compute production bonus earned by each group:

- (a) Actual working days : 25
- (b) Production : 21,000 tons
- (c) Rejection by customer : 500 tons
- (d) Machine breakdown : 40 hours

Q.34. Human Resources Department of A Ltd. computed labour turnover by replacement method at 3% for the quarter ended June 2015. During the quarter, fresh recruitment of 40 workers was made. The number of workers at the beginning and end of the quarter was 990 and 1,010 respectively.

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You are required to calculate the labour turnover rate by Separation Method and Flux Method.

Q.36. The management of B.R Ltd. is worried about their increasing employee turnover in the factory and before analyzing the causes and taking remedial steps, it wants to have an idea of the profit foregone as a result of employee turnover in the last year. Last year sales amounted to ₹83,03,300 and P/V ratio was 20 per cent. The total number of actual hours worked by the direct employee force was 4.45 lakhs. As a result of the delays by the Personnel Department in filling vacancies due to employee turnover, 1,00,000 potentially productive hours were lost. The actual direct employee hours included 30,000 hours attributable to training new recruits, out of which half of the hours were unproductive.

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The costs incurred consequent on employee turnover revealed, on analysis, the following: Settlement cost due to leaving ₹43,820 Recruitment costs ₹26,740 Selection costs ₹12,750 Training costs ₹30,490

Assuming that the potential production lost as a consequence of employee turnover could have been sold at prevailing prices, find the profit foregone last year on account of employee turnover.

Q.37. Super 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.

Q.40. Calculate total monthly remuneration of three workers Ram, Shyam and Mohan from the following data:



- (a) Standard production per month per worker 2,000 units. Actual production during the month – Ram 1700 units, Shyam 1500 units and Mohan 1,900 units.
- (b) Piece-work rate is Rs. 2 per unit (actual production).
- (c) Additional production bonus is Rs. 100 for each percentage of actual production exceeding 80 per cent actual production over standard (example: 79 per cent nil, 80 per cent nil, 81 per cent Rs. 100, 82 per cent Rs. 200, and so on).
- (d) Dearness allowance fixed at Rs. 300 per month.

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OVERHEADS



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:

Particulars	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:

Particulars	A	B	X	Y
Service Dept. 'X' (%)	55	25	-	20
Service Dept. 'Y' (%)	60	35	5	-

You are required to:

- PREPARE a statement showing distribution of overheads to various departments.
- PREPARE a statement showing re-distribution of service departments expenses to production departments using-
 - Simultaneous equation method
 - Trial and error method
 - Repeated Distribution Method.

Q.14. 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 time per 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, estimated at 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 paise 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.

Q.16. A machine shop cost centre contains three machines of equal capacities. To operate these three machines nine operators are required i.e. three operators on each machine. Operators are paid ₹20 per hour. The factory works for fortyeight hours in a week which includes 4 hours set up time. The work is jointly done by operators. The operators are paid fully for the forty eight hours. In additions they are paid a bonus of 10 per cent of productive time. Costs are reported for this company on the basis of thirteen four-weekly period. The company for the purpose of computing machine hour rate includes the direct wages of the operator and also recoups the factory overheads allocated to the machines. The following details of factory overheads applicable to the cost centre are available:



- Depreciation 10% per annum on original cost of the machine. Original cost of the each machine is ₹52,000.
- Maintenance and repairs per week per machine is ₹60.
- Consumable stores per week per machine are ₹75.
- Power : 20 units per hour per machine at the rate of 80 paise per unit.
- Apportionment to the cost centre : Rent per annum ₹5,400, Heat and Light per annum ₹9,720, foreman's salary per annum ₹12,960 and other miscellaneous expenditure per annum ₹18,000.

- Q.17.** 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.

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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.

- Q.18.** In a factory, a machine is considered to work for 208 hours in a month. It includes maintenance time of 8 hours and set up time of 20 hours.

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The expense data relating to the machine are as under: Cost of the machine is ₹5,00,000. Life 10 years. Estimated scrap value at the end of life is ₹20,000.

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Particulars	(₹)
Repairs and Maintenance per annum	60,480
Consumables per annum	47,250
Rent of building per annum (machine of reference occupies 1/6th area)	72,000
Supervisor's salary per month (common to 3 machines)	6,000
Wages of operator per month per machine	2,500
General lighting charges per month allocated to the machine	1,000
Power 25 units per hour at 25 per unit	

Power is required for productive purposes only. Set up time, though productive, does not require power. The Supervisor and Operator are permanent. Repairs and maintenance and consumable stores vary with the running of the machine.

Required:

Calculate a two-tier machine hour rate for (a) set up time, and (b) running time

Q.20. You are given the following information of the three machines of a manufacturing department of X Ltd.:

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Particulars	Preliminary estimates of expenses			
	Total	(per annum)		
		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:

Particulars	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.

Q.21 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:

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- 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 :

- 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.
- Compute the Machine Hour Rate for the individual jobs i.e. Vulcanising, Brushing and Striping.

Q.25. Your company uses a historical cost system and applies overheads on the basis of "pre- determined" rates. The following are the figure from the Trial Balance as at 30th September, 2013: -

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Manufacturing overheads	₹4,26,544 Dr.
Manufacturing overheads applied	₹3,65,904 Cr.
Work-in-progress	₹1,41,480 Dr.
Finished goods stocks	₹2,30,732 Dr.
Cost of goods sold	₹8,40,588 Dr.

Give two methods for the disposal of the unabsorbed overheads and show the profit implications of each method.

- Q.27.** A Ltd has calculated a predetermined overhead rate of Rs.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
Rs.3,38,875	14,500
Rs.3,47,625	15,500
Rs.3,56,375	16,500

You are required to:

- CALCULATE the variable overhead absorption rate per machine hour.
- CALCULATE the estimated total fixed overheads.
- CALCULATE the budgeted level of activity in machine hours.
- CALCULATE the amount of under/over absorption of overheads if the actual machine hours were 14,970 and actual overheads were Rs.3,22,000.
- ANALYSE the arguments for and against using departmental absorption rates as opposed to a single or blanket factory wide rate.

- Q.29.** In the current quarter, a company has undertaken two jobs. The data relating to these jobs are as under:



Particulars	Job 1102	Job 1108
Selling price	₹1,07,325	₹1,57,920
Profit as percentage on cost	8%	12%
Direct Materials	₹37,500	₹54,000
Direct Wages	₹30,000	₹42,000

It is the policy of the company to charge Factory overheads as percentage on direct wages and Selling and Administration overheads as percentage on Factory cost.

The company has received a new order for manufacturing of a similar job. The estimate of direct materials and direct wages relating to the new order are ₹64,000 and ₹50,000 respectively. A profit of 20% on sales is required.

You are required to compute

- The rates of Factory overheads and Selling and Administration overheads to be charged.
- The Selling price of the new order.

Q.37. A cost centre in a factory furnishes the following working conditions:



Normal working week	40 hours
Number of machines	15
Normal weekly loss of hours on maintenance, etc.	4 hours per machine
Estimated annual overhead	Rs. 1,55,520
Estimated direct wage rate	Rs. 3 per hour
Number of weeks worked per year	48
Actual results in respect of a 4-week period are:	
Overhead incurred	Rs. 15,000
Wages incurred	Rs. 7,000
Machine-hours produced	2,200

You are required to:

- Calculate the overhead rate per machine-hour, and
- Calculate the amount of under or over-absorption of both wages and overhead.

Q.41. A manufacturing company having strength of 50 workers planned for 300 working days of 8 hours each. Based on earlier year's trend, it is estimated that average absenteeism per worker would be 10 days in addition to eligibility of 20 days annual leave. The budgeted overheads amounted to ₹ 15,12,000.



During the year, factory worked for 2 extra days to meet the production targets. The actual average absenteeism per worker was 8 days. Out of 50 workers, 20 took the annual leave of 20 days and the remaining took 15 days leave. 450 hours were lost due to machine breakdown. Overtime worked on production during the year amounted to 650 hours. Actual overheads amounted to ₹ 15,92,600.

You are required to:

- Calculate overhead absorption rate based on direct labour hours.
- Determine the under or over absorption of overheads during the year.

- Q.43.** HCP 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:

NB
PN

		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:

- Prepare a statement showing distribution of overheads to various departments, clearly showing the basis of distribution.
- Calculate the total budgeted overheads for both production departments after the service departments have been re-apportioned to them.
- Calculate the most appropriate overhead absorption rate for each of the production department.



ACTIVITY BASED COSTING

Q.4. ABC Ltd. is engaged in production of three types of Fruit Juices: Apple, Orange and Mixed Fruit.

NB
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The following cost data for the month of March 2020 are as under:

Particulars	Apple	Orange	Mixed Fruit
Units produced and sold	10,000	15,000	20,000
Material per unit (₹)	8	6	5
Direct Labour per unit (₹)	5	4	3
No. of Purchase Orders	34	32	14
No. of Deliveries	110	64	52
Shelf Stocking Hours	110	160	170

Overheads incurred by the company during the month are as under:

	(₹)
Ordering costs	64,000
Delivery costs	1,58,200
Shelf Stocking costs	87,560

Required:

- Calculate cost driver's rate.
- Calculate total cost of each product using Activity Based Costing.

Q.7.



NB
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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:

- Calculate the total cost per unit and selling price per unit for each of the three products using:
 - The traditional costing approach currently used by JH Plastics Limited;
 - Activity based costing (ABC) approach.
- Calculate the difference in selling price per unit as per (a) and (b) above and show which product is under-priced or over-priced. as an application base, calculate the amount of cost distortion (under-costed or over-costed) for each equipment.

- Q.8.** 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:

NB
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	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 ongoing restocking	₹8,64,000	8,640 hours of shelfstocking time
Customer Support	Assistance provided to customers including check-out	₹15,36,000	15,36,000 items sold

Required:

- 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.
- 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.

Q.9. PCP Limited belongs to the apparel industry. It specializes in the distribution of fashionable garments. It buys from the industry and resells the same to the following two different supermarkets:



(i) Supermarket A dealing in Adults' garments (Age group 15 - 30)

(ii) Supermarket B dealing in Kids' garments (Age group 5 - 10)

The following data for the month of April in respect of PCP Limited has been reported:

NB
PN

Particular	Supermarket A (₹)	Supermarket B (₹)
Average revenue per delivery	1,69,950	57,750
Average cost of goods sold per delivery	1,65,000	55,000
Number of deliveries	660	1,650

In the past, PCP Limited has used gross margin percentage to evaluate the relative profitability of its supermarket segments.

The company plans to use activity -based costing for analysing the profitability of its supermarket segments.

The April month's operating costs (other than cost of goods sold) of PCP Limited are ₹ 16,55,995. These operating costs are assigned to five activity areas. The cost in each area and Activity analysis including cost driver for the month of April are as follows:

Activity Area	Total costs (₹)	Cost Driver
Store delivery	3,90,500	Store deliveries
Cartons dispatched to store	4,15,250	Cartons dispatched to a store per delivery
Shelf-stocking at customer store	64,845	Hours of shelf-stocking
Line-item ordering	3,45,400	Line-items per purchase order
Customer purchase order processing	4,40,000	Purchase orders by customers

Other data for the month of April include the following:

Particular	Supermarket A	Supermarket B
Total number of store deliveries	1,100	2,805
Average number of cartons shipped per store delivery	250	50
Average number of hours of shelf-stocking per store delivery	6	1.5
Average number of line items per order	14	12
Total number of orders	770	1,980

Required:

- COMPUTE gross-margin percentage for each of its supermarket segments and compute PCP Limited's operating income.
- COMPUTE the operating income of each supermarket segments using the activitybased costing information..

- Q.11.** BABYSOFT is a global brand created by Bio-organic Ltd. The company manufactures three range of beauty soaps i.e. BABYSOFT- Gold, BABYSOFT- Pearl, and BABYSOFT- Diamond. The budgeted costs and production for the month of December, 2019 are as follows:

NB
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	BABYSOFT- Gold		BABYSOFT- Pearl		BABYSOFT- 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	40 minutes	₹ 10 / hour

Bio-organic 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, Bio-organic 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
Utilities	80,000	Number of Machine operations

The number of machine operators per unit of production are 5, 5, and 6 for BABYSOFT- Gold, BABYSOFT- Pearl, and BABYSOFT- Diamond respectively.

Q.12. 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:

NB
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Particulars	A	B	C	G
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, depreciation 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:

- Machine department costs should be apportioned among set-up, stores receiving and inspection activities in proportion of 4 : 3 : 2.
- 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:

- CALCULATE the total cost of each product, if all overhead costs are absorbed on machine- hour rate basis.
- CALCULATE the total cost of each product using activity-based costing.

Q.15. Equate bank offers 3 products, viz., deposits, Loans and Credit Cards. The bank has selected 4 activities for a detailed budgeting exercise, following activity-based costing methods.

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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 (₹)	Estimation for the budget period
ATM Services:		
(a) Machine Maintenance	5,20,000	All fixed, no change.
(b) Rents	2,60,000	Fully fixed, no change.
(c) Currency Replenishment Cost	1,30,000	Expected to double during budget period.
	9,10,000	
Computer Processing	6,50,000	Half this amount is fixed, and no change is expected. The variable portion is expected to increase to three times the current level.
Issuing Statements	23,40,000	Presently, 3.90 lakh statements are made. In the budget period, 6.5 lakh statements are expected. For every single increase of statement, one rupee is the budgeted increase.
Computer Inquiries	2,60,000	Estimated to increase by 80% during the budget period.

The activity drivers and their budgeted quantifies are given below:

Activity Drivers	Deposits	Loans	Credit Cards
No. of ATM Transactions	1,95,000	---	65,000
No. of Computer Processing Transactions	19,50,000	2,60,000	3,90,000
No. of Statements to be issued	4,55,000	65,000	1,30,000
Telephone Minutes	4,68,000	2,34,000	2,34,000

The bank budgets a volume of 76,180 deposit accounts, 16,900 loan accounts, and 18,200 Credit Card Accounts.

Required:

- CALCULATE the budgeted rate for each activity.
- PREPARE the budgeted cost statement activity wise.
- COMPUTE the budgeted product cost per account for each product using (i) and (ii) above.

- Q.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:

NB
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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:

- Calculate the cost per unit for each product using the conventional method.
- Calculate the cost per unit for each product using activity based costing method.

Q.20. The profit margin of BABY Hairclips Company were over 20% of sales producing BROWN and BLACK hairclips.



NB
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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 activityand 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 –

- CALCULATE operating income and operating income as per percentage of sales using activity-based costing system.
- STATE the reasons for different operating income under traditional income system and activity-based costing system.

6

COST SHEET

Q.5. M/s Areeba Private Limited has a normal production capacity of 36,000 units of toys per annum. The estimated costs of production are as under:



- i. Direct Material Rs. 40 per unit
- ii. Direct Labour Rs. 30 per unit (subject to a minimum of Rs. 48,000 p.m.)
- iii. Factory Overheads:
 - (a) Fixed Rs. 3,60,000 per annum
 - (b) Variable Rs. 10 per unit
 - (c) Semi-variable Rs. 1,08,000 per annum up to 50% capacity and additional Rs. 46,800 for every 20% increase in capacity or any part thereof.
- iv. Administrative Overheads Rs. 5, 18,400 per annum (fixed)
- v. Selling overheads are incurred at Rs. 8 per unit.
- vi. Each unit of raw material yields scrap which is sold at the rate of Rs. 5 per unit.
- vii. In year 2019, the factory worked at 50% capacity for the first three months but it was expected that it would work at 80% capacity for the remaining nine months.
- viii. During the first three months, the selling price per unit was Rs. 145.

You are required to:

- i. Prepare a cost sheet showing Prime Cost, Works Cost, Cost of Production and Cost of Sales.
- ii. Calculate the selling price per unit for remaining nine months to achieve the total annual profit of Rs. 8,76,600.

Q.6. PJ Ltd manufactures hockey sticks. It sells the products at ₹ 500 each and makes a profit of ₹ 125 on each stick. The Company is producing 5,000 sticks annually by using 50% of its machinery capacity.



The cost of each stick is as under:

Direct Material	₹150
Direct Wages	₹50
Works Overhead	₹125 (50% fixed)
Selling Expenses	₹50 (25% variable)

The anticipation for the next year is that cost will go up as under:

Fixed Charges	10%
Direct Wages	20%
Direct Material	5%

There will not be any change in selling price.

There is an additional order for 2,000 sticks in the next year.

Calculate the lowest price that can be quoted so that the Company can earn the same profit as it has earned in the current year?

- Q.7.** Aloe 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:

NB
PN

Level	Works cost per unit (₹)
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 ₹ 3,60,000 and fixed marketing expenses amount to ₹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 ₹60,000; 2nd prize of ₹50,000, 3rd prize of ₹40,000 and ten consolation prizes of ₹5,000 each to customers buying the product.
- (iii) It spends ₹2,00,000 on refreshments served every month to its customers;
- (iv) It sponsors a television programme every week at a cost of ₹ 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.

- Q.9. Xim Ltd. manufactures two types of boxes 'Super' and 'Normal'. The cost data for the year ended 31st March, 2021 is as follows:

NB
PN

	₹
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

Q. 12 The following data relates to manufacturing of a standard product during the month of March, 2021:



Particulars	Amount (₹)
Stock of Raw material as on 01-03-2021	80,000
Work in Progress as on 01-03-2021	50,000
Purchase of Raw material	2,00,000
Carriage Inwards	20,000
Direct Wages	1,20,000
Cost of special drawing	30,000
Hire charges paid for Plant	24,000
Return of Raw Material	40,000
Carriage on return	6,000
Expenses for participation in Industrial exhibition	8,000
Legal charges	2,500
Salary to office staff	25,000
Maintenance of office building	2,000
Depreciation on Delivery van	6,000
Warehousing charges	1,500
Stock of Raw material as on 31-03-2021	30,000
Stock of Work in Progress as on 31-03-2021	24,000

- 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 ₹ 5,000 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 8000 units during the month.

You are required to prepare a Cost Sheet for the above period showing the:

- Cost of Raw Material consumed.
- Prime Cost
- Work Cost
- Cost of Production
- Cost of Sales

Q.13. XYZ a manufacturing firm, has revealed following information for September, 2019:

NB
PN

	1st September (₹)	30th September (₹)
Raw Materials	2,42,000	2,92,000
Works-in-progress	2,00,000	5,00,000

The firm incurred following expenses for a targeted production of 1,00,000 units during the month :

	₹
Consumable Stores and spares of factory	3,50,000
Research and development cost for process improvements	2,50,000
Quality control cost	2,00,000
Packing cost (secondary) per unit of goods sold	2
Lease rent of production asset	2,00,000
Administrative Expenses (General)	2,24,000
Selling and distribution Expenses	4,13,000
Finished goods (opening)	Nil
Finished goods (closing)	5000 units

Defective output which is 4% of targeted production, realizes ₹ 61 per unit.

Closing stock is valued at cost of production (excluding administrative expenses)

Cost of goods sold, excluding administrative expenses amounts to ₹ 78,26,000.

Direct employees cost is 1/2 of the cost of material consumed.

Selling price of the output is ₹ 110 per unit.

You are required to :

- Calculate the Value of material purchased
- Prepare cost sheet showing the profit earned by the firm.

Q.16. Impact Ltd. provides you the following details of its expenditures for the year ended 31st March, 2021:

NB
PN

S. 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 managers:		
	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.

Q.19. 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:

- FIND out the value of materials purchased.
- PREPARE a cost statement showing the various elements of cost and also the profit earned.

Q.18. ABC Ltd is engaged in producing electronic equipments. It has furnished following details related to its products produced during a month:

NB
PN

	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, allowances etc.		5,50,50,000
Primary packaging cost (per unit)		140
R&D expenses & Quality control expenses		1,90,00,000
Guards' salaries		20,00,000
Directors' salaries		60,00,000
Consumable stores, depreciation on plant related to factory overhead		3,42,00,000
Product inspection (before primary packaging)		22,00,000
Rearrangement design of factory machine		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, Guards will 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 of 25% on sales.

You are required to PREPARE a cost sheet

- Q.21.** The following information is available from SN Manufacturing Limited's for the month of April 2023.

NB
PN

	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:

- 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).
- Calculate the selling price per unit if profit is charged at 20 percent on sales.

Q.23. 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.



COST ACCOUNTING SYSTEMS

- Q.2.** As of 31st March, 2014, the following balances existed in a firm's cost ledger, which is maintained separately on a double entry basis:

NB
PN

	Debit (₹)	Credit (₹)
Stores Ledger Control A/c	3,00,000	-
Work-in-Progress Control A/c	1,50,000	-
Finished Goods Control A/c	2,50,000	-
Manufacturing Overhead Control A/c	-	15,000
Cost Ledger Control A/c	-	6,85,000
	7,00,000	7,00,000

During the next quarter, the following items arose:

	(₹)
Finished Product (at cost)	2,25,000
Manufacturing Overhead Incurred	85,000
Raw Material Purchased	1,25,000
Factory Wages	40,000
Indirect Labour	20,000
Cost of Sales	1,75,000
Materials issued to production	1,35,000
Sales returned (at cost)	9,000
Materials returned to suppliers	13,000
Manufacturing overhead charged to production	85,000

You are required to prepare the Cost Ledger Control A/c, Stores Ledger Control A/c, Work-in-Progress Control A/c, Finished Stock Ledger Control A/c, Manufacturing Overhead Control A/c, Wages Control A/c, Cost of Sales A/c and the Trial Balance at the end of the quarter.

Q.4. Acme Manufacturing Co. Ltd. opens the costing records, with the balances as on 1st July, 20X2 as follows:

NB
PN

	(₹)	(₹)
Material Control A/c	1,24,000	
Work-in-Process Control A/c	62,500	
Finished Goods Control A/c	1,24,000	
Production Overhead Control A/c	8,400	
Administrative Overhead Control A/c		12,000
Selling and Distribution Overhead Control A/c	6,250	
Cost Ledger Control A/c		3,13,150
	3,13,150	3,13,150

The following are the transactions for the quarter ended 30th September 20X2:

	(₹)
Materials purchased	4,80,100
Materials issued to jobs	4,77,400
Materials to works maintenance	41,200
Materials to administration office	3,400
Materials to selling department	7,200

Wages direct	1,49,300
Wages indirect	65,000
Transportation for indirect materials	8,400
Production overheads	2,42,250
Absorbed production overheads	3,59,100
Administration overheads	74,000
Administration allocation to production	52,900
Administration allocation to sales	14,800
Sales overheads	64,200
Sales overheads absorbed	82,000
Finished goods produced	9,58,400
Finished goods sold	9,77,300
Sales realization	14,43,000

Make up the various accounts as you envisage in the Cost Ledger and prepare a Trial Balance as at 30th September, 20X2.

Q.9. The following incomplete accounts are furnished to you for the month ended 31st October, 20X2.



Stores Ledger Control Account		
01.10.20X2	To Balance	₹54,000
Work in Process Control Account		
01.10.20X2	To Balance	₹6,000
Finished Goods Control Account		
01.10.20X2	To Balance	₹75,000
Factory Overheads Control Account		
Total Debits for October, 20X2		₹45,000
Creditors for Purchases Account		
01.10.20X2	By Balance	₹30,000

Additional information:

- 1) The factory overheads are applied by using a budgeted rate based on direct labour hours. The budget for overheads for 20X2 is ₹6,75,000 and the budget of direct labour hours is 4,50,000.
- 2) The balance in the account of creditors for purchases on 31.03.20X2 is ₹15,000 and the payments made to creditors in October, 20X2 amount to ₹1,05,000.
- 3) The finished goods inventory as on 31st October, 20X2 is ₹66,000.
- 4) The Cost of Goods sold during the month was ₹1,95,000.
- 5) On 31st October, 20X2 there was only one unfinished job in the factory. The cost records show that ₹3,000 (1,200 direct labour hours) of direct labour cost and ₹6,000 of direct material cost had been charged.
- 6) A total of 28,200 direct labour hours were worked in October, 20X2. All factory workers earn same rate of pay.
- 7) All actual factory overheads incurred in October, 20X2 have been posted.

You are required to find:

- (a) Materials purchased during October, 20X2
- (b) Cost of goods completed in October, 20X2
- (c) Overheads applied to production in October, 20X2
- (d) Balance of Work-in-Process Control A/c on 31st October, 20X2
- (e) Direct Materials consumed during October, 20X2
- (f) Balance of Stores Ledger Control Account on 31st October, 20X2
- (g) Over absorbed or under absorbed overheads for October, 20X2

- Q.13.** R Limited showed a net loss of ₹35,400 as per their cost accounts for the year ended 31st March, 2014. However, the financial accounts disclosed a net profit of ₹67,800 for the same period. The following information were revealed as a result of scrutiny of the figures of cost accounts and financial accounts:

NB
PN

	(₹)
(i) Administrative overhead under recovered	25,500
(ii) Factory overhead over recovered	1,35,000
(iii) Depreciation under charged in Cost Accounts	26,000
(iv) Dividend received	20,000
(v) Loss due to obsolescence charged in Financial Accounts	16,800
(vi) Income tax provided	43,600
(vii) Bank interest credited in Financial Accounts	13,600
(viii) Value of opening stock:	
In Cost Accounts	1,65,000
In Financial Accounts	1,45,000
(ix) Value of closing stock:	
In Cost Accounts	1,25,500
In Financial Accounts	1,32,000
(x) Goodwill written-off in Financial Accounts	25,000
Notional rent of own premises charged in Cost Accounts	₹60,000
Provision for doubtful debts in Financial Accounts	₹15,000

Prepare a reconciliation statement by taking costing net loss as base.

- Q.17.** The following figures have been extracted from the Financial Accounts of a manufacturing firm for the first year of its operation:

NB
PN

	(₹)
Direct Material Consumption	50,00,000
Direct Wages	30,00,000
Factory Overhead	16,00,000
Administration Overheads (production related)	7,00,000
Selling and Distribution Overheads	9,60,000
Bad Debts	80,000
Preliminary Expenses written off	40,000
Legal Charges	10,000
Dividends Received	1,00,000
Interest Received on Deposits	20,000
Sales (1,20,000 units)	1,20,00,000
Closing Stock:	
Finished Goods (4,000 units)	3,20,000
Work-in-Process	2,40,000

The cost accounts for the same period reveal that the direct material consumption was ₹56,00,000. Factory overhead is recovered at 20% on prime cost. Administration overhead is recovered at ₹6 per unit of production. Selling and distribution overheads are recovered at ₹8 per unit sold.

Prepare the Profit and Loss Accounts both as per financial records and as per cost records. Reconcile the profits as per the two records.

Q.19. The following is the Trading and Profit & Loss Account of Omega Limited:



Particulars	(₹)	Particulars	(₹)
To Materials consumed	23,01,000	By Sales (30,000 units)	48,75,000
To Direct wages	12,05,750	By Finished goods Stock (1,000 units)	1,30,000
To Production Overheads	6,92,250	By Work-in-progress:	
To Administration Over-heads	3,10,375	Materials 55,250	
To Selling and Distribution Overheads	3,68,875	Wages 26,000	
To Preliminary Expenses written off	22,750	Production Overheads 16,250	97,500
To Goodwill written off	45,500		
To Fines	3,250	By Dividends received	3,90,000
To Interest on Mortgage	13,000	By Interest on bank deposits	65,000
To Loss on Sale of machine	16,250		
To Taxation	1,95,000		
To Net Profit for the year	3,83,500		
	55,57,500		55,57,500

Omega Limited manufactures a standard unit.

The Cost Accounting records of Omega Ltd. show the following:

- (1) Production overheads have been charged to work-in-progress at 20% on Prime cost. (2) Administration Overheads have been recovered at ₹9.75 per finished Unit. (3) Selling & distribution Overheads have been recovered at ₹13 per Unit sold.
- (4) The Under- or Over-absorption of Overheads has not been transferred to costing P/L A/c.

Required:

- (a) Prepare a proforma Costing Profit & Loss account, indicating net profit.
- (b) Prepare Control accounts for Production overheads, Administration Overheads and Selling & Distribution Overheads.
- (c) Prepare a statement reconciling the profit disclosed by the Cost records with that shown in Financial accounts.

Q.28. 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.

10

**PROCESS
AND
OPERATION
COSTING**

Q.5

NB

PN

JK Ltd. produces a product "AZE", which passes through two processes, viz., process I and process II. The output of each process is treated as the raw material of the next process to which it is transferred and output of the second process is transferred to finished stock. The following data related to December, 2013:

	Process- I	Process- II
25,000 units introduced at a cost of	₹ 2,00,000	?
Material consumed	₹ 1,92,000	₹ 96,020
Direct labour	₹ 2,24,000	₹ 1,28,000
Manufacturing expenses	₹ 1,40,000	₹ 60,000
Normal wastage of input	10%	10%
Scrap value of normal wastage		
(per unit)	₹ 9.90	₹ 8.60
Output in Units	22,000	20,000

Required:

- Prepare Process I and Process II account.
- Prepare Abnormal Gain/ Loss account as the case may be for each process.

Q.6

Meta Company Ltd. is engaged in the production of product 'Trio' which passes through two different processes Process P and Process Q. Other information obtained from books of account for the year is as follows:

Particulars	Process P	Process Q
Raw material used	10,000	---
Raw material cost per unit	₹ 80	---
Direct wages	₹ 52,000	₹ 78,000
Direct Expenses	₹ 8,600	₹ 11,100
Selling price per unit of output	₹ 130	₹ 190

Production overheads of ₹ 3,00,000 are recovered as percentage of direct wages.

Actual output of the two processes was:

P-9,200 units and Q-6,400 units. 3/4th of the output of Process P was passed on to the Process Q and the balance was sold. The entire output of process Q was sold.

Management & Selling expenses during the year were ₹ 1,70,000.

These are not allocable to the processes.

The normal loss of the two processes, calculated on the input of every process was:

Process P- 6% and Process Q-10%

The Loss of Process P was sold at ₹ 5 per unit and that of Q at ₹ 8 per unit.

Assume that Process P and Process Q are not the responsibility centres.

You are required to prepare:

- Process P Account
- Process Q Account
- Abnormal Loss and Abnormal Gain Account

Q.8

MP Ltd. produces a Product-X, which passes through three processes, I, II and III. In Process-III a by-product arises, which after further processing at a cost of Rs. 85 per unit, product Z is produced. The information related for the month of September 2020 is as follows:

NB
PN

	Process-I	Process-II	Process-III
Normal loss	5%	10%	5%
Materials introduced (7,000 units)	1,40,000	-	-
Materials added	62,000	1,36,000	84,200
Direct wages	42,000	54,000	48,000
Direct expenses	14,000	16,000	14,000

Production overhead for the month is Rs. 2,88,000, which is absorbed as a percentage of direct wages.

The scraps are sold at Rs. 10 per unit

Product-Z can be sold at Rs. 135 per unit with a selling cost of Rs. 15 per unit No. of units produced:

Process-I- 6,600; Process-II- 5,200, Process-III- 4,800 and Product-Z- 600 There is no stock at the beginning and end of the month.

You are required to PREPARE accounts for:

- Process-I, II and III
- By-product-Z

Q.13

ABC Limited manufactures a product 'ZX' by using the process namely RT. For the month of May, 2014, the following data are available:

NB
PN

Process RT	
Material introduced (units)	16,000
Transfer to next process (units)	14,400
Work-in-progress:	
At the beginning of the month (units) (80% complete)	4,000
At the end of the month (units) (66.66%)	3,000
Cost records:	
WIP at the beginning of the month	
Material	₹ 30,000
Conversion cost	₹ 29,200
Cost during the month:	
Materials	₹ 1,20,000
Conversion cost	₹ 1,60,800

Normal spoiled units are 10% of good finished output transferred to next process.

Defects in these units are identified in their finished state. Material for the product is put in the process at the beginning of the cycle of operation, whereas labour and other indirect cost flow evenly over the year. It has no realizable value for spoiled units.

Required:

- Statement of equivalent production (Average cost method)
- Statement of cost and distribution of cost
- Process accounts.

Q.14 Following data are available for a product for the month of July, 2016:



Particulars	Process- I (₹)	Process- II (₹)
Opening work-in- progress	Nil	Nil
Costs incurred during the month:		
- Direct materials	6,00,000	
- Labour	1,20,000	1,60,000
- Factory overheads	2,40,000	2,00,000
Units of production:		
Received in process	40,000	36,000
Completed and transferred	36,000	32,000
Closing work-in-progress	2,000	?
Normal loss in process	2,000	1,500

Production remaining in process has to be valued as follows

Materials	100%
Labour	50%
Overheads	50%

There has been no abnormal loss in Process- II.

The company follows weighted average method for valuing inventory.

Prepare Process Accounts after working out the missing figures and with detailed workings.

Q.17 A company produces a component, which passes through two processes. During the month of December, 2021, materials for 40,000 components were put into Process -I of which 30,000 were completed and transferred to Process-II. Those not transferred to Process- II were 100% complete as to materials cost and 50% complete as to labour and overheads cost. The Process- I costs incurred were as follows:



Direct Materials	₹ 6,00,000
Direct Wages	₹ 7,00,000
Factory Overheads	₹ 4,90,000

Of those transferred to Process II, 28,000 units were completed and transferred to finished goods stores. There was a normal loss with no salvage value of 200 units in Process II. There were 1,800 units, remained unfinished in the process with 100% complete as to materials and 25% complete as regard to wages and overheads. Costs incurred in Process-II are as follows:

Packing Materials	₹ 1,60,000
Direct Wages	₹ 1,42,250
Factory Overheads	₹ 1,70,700

Packing material cost is incurred at the end of the second process as protective packing to the completed units of production.

Required:

- PREPARE Statement of Equivalent Production, Cost per unit and Process I A/c.
- PREPARE statement of Equivalent Production, Cost per unit and Process II A/c.

Q.23

NB

PN

Akash Ltd. manufactures chemical solutions for the food processing industry. The manufacturing takes place in a number of processes and the company uses FIFO method to value work-in-process and finished goods. At the end of the last month, a fire occurred in the factory and destroyed some of paper containing records of the process operations for the month.

Akash Ltd. needs your help to prepare the process accounts for the month during which the fire occurred. You have been able to gather some information about the month's operating activities but some of the information could not be retrieved due to the damage.

The following information was salvaged:

- i) Opening work-in-process at the beginning of the month was 800 litres, 70% complete for labour and 60% complete for overheads. Opening work-in-process was valued at ₹ 26,640.
- ii) Closing work-in-process at the end of the month was 160 litres, 30% complete for labour and 20% complete for overheads.
- iii) Normal loss is 10% of input and total losses during the month were 1,800 litres partly due to the fire damage.
- iv) Output sent to finished goods warehouse was 4,200 litres.
- v) Losses have a scrap value of ₹ 15 per litre.
- vi) All raw materials are added at the commencement of the process.
- vii) The cost per equivalent unit (litre) is ₹ 39 for the month made up as follows:

	(₹)
Raw Material	23
Labour	7
Overheads	9
	39

Required:

- i) Calculate the quantity (in litres) of raw material inputs during the month.
- ii) Calculate the quantity (in litres) of normal loss expected from the process and the quantity (in litres) of abnormal loss / gain experienced in the month.
- iii) Calculate the values of raw material, labour and overheads added to the process during the month.
- iv) Prepare the process account for the month.

Q.26

A Chemical Company carries on production operation in two processes. The material first pass through Process I, where Product 'A' is produced. Following data are given for the month just ended:

Material input quantity	2,00,000 kg.
Opening work-in-progress quantity (Material 100% and conversion 50% complete)	40,000 kg.
Work completed quantity	1,60,000 kg.
Closing work-in-progress quantity (Material 100% and conversion two-third complete)	30,000 kg.
Material input cost	₹ 75,000
Processing cost	₹ 1,02,000
Opening work-in-progress cost	
Material cost	₹ 20,000
Processing cost	₹ 12,000

Normal process loss in quantity may be assumed to be 20% of material input. It has no realizable value.

Any quantity of Product 'A' can be sold for ₹1.60 per kg.

Alternatively, it can be transferred to Process II for further processing and then sold as Product 'AX' for ₹2 per kg. Further materials are added in Process II, which yield two kg. of product 'AX' for every kg. of Product 'A' of

Process II.

Of the 1,60,000 kg. per month of work completed in Process I, 40,000 kg. are sold as Product 'A' and 1,20,000 kg. are passed through Process II for sale as Product 'AX'. Process II has facilities to handle up to 1,60,000 kg. of Product 'A' per month, if required.

The monthly costs incurred in Process II (other than the cost of Product 'A') are:

	1,20,000 kg. of Product 'A' input (₹)	1,60,000 kg. of Product 'A' input (₹)
Materials Cost	1,32,000	1,76,000
Processing Costs	1,20,000	1,40,000

Required:

(i) Determine, using the weighted average cost method, the cost per kg. of Product 'A' in Process I and value of both work completed and closing work-in-progress for the month just ended.

(ii) Is it worthwhile processing 1,20,000 kg of Product 'A' further?

(iii) Calculate the minimum acceptable selling price per kg., if a potential buyer could be found for additional output of Product 'AX' that could be produced with the remaining Product 'A' quantity.

Q.29 PQR Company Ltd. provides the following information relating to Process-P:



- (i) Opening Work-in-progress - NIL
- (ii) Units Introduced - 45,000 units @ ₹ 10 per unit
- (iii) Expenses debited to the process:
 - Direct material ₹ 65,500
 - Labour ₹ 90,800
 - Overhead ₹ 1,80,700
- (iv) Normal loss in the process - 2% of Input
- (v) Work-in progress - 1800 units
 - Degree of completion
 - Materials - 100%
 - Labour - 50%
 - Overhead - 40%
- (vi) Finished output - 42,000 units
- (vii) Degree of completion of abnormal loss:
 - Materials - 100%
 - Labour - 80%
 - Overhead - 60%

(viii) Units scrapped as normal loss were sold at ₹ 5 per unit.

(ix) All the units of abnormal loss were sold at ₹ 2 per unit.

You are required to PREPARE:

- Statement of equivalent production.
- Statement showing the cost of finished goods, abnormal loss and closing balance of work-in-progress.
- Process-P account and abnormal loss account.

Q.33 The following information is furnished by ABC Company for Process - II of its manufacturing activity for the month of April 2023:



- (i) Opening Work-in-Progress - Nil
- (ii) Units transferred from Process I - 55,000 units at ₹ 3,27,800
- (iii) Expenditure debited to Process - II:
 - Consumables ₹ 1,57,200
 - Labour ₹ 1,04,000
 - Overhead ₹ 52,000
- (iv) Units transferred to Process III - 51,000 units
- (v) Closing WIP - 2,000 units (Degree of completion):
 - Consumables 80%
 - Labour 60%
 - Overhead 60%
- (vi) Units scrapped - 2,000 units, scrapped units were sold at ₹ 5 per unit
- (vii) Normal loss - 4% of units introduced

You are required to:

- (i) Prepare a Statement of Equivalent Production.
- (ii) Determine the cost per unit
- (iii) Determine the value of Work-in-Process and units transferred to Process - III

Q.31

A Ltd. mixes powdered ingredients in two different processes to produce one product. The output of Process- I becomes the input of Process-II and the output of Process-II is transferred to the Packing department.

From the information given below, you are required to PREPARE accounts for Process-I, Process- II and Abnormal loss/ gain A/c to record the transactions for the month of August 2023.

Process-I

Input	
Material A	6,000 kilograms at ₹ 50 per kilogram
Material B	4,000 kilograms at ₹ 100 per kilogram
Labour	430 hours at ₹ 50 per hour
Normal loss	5% of inputs. Scrap is disposed off at ₹16 per kilogram
Output	9,200 kilograms.

There is no work-in-process at the beginning or end of the month.

Process-II

Input	
Material C	6,600 kilograms at ₹ 125 per kilogram
Material D	4,200 kilograms at ₹ 75 per kilogram
Flavouring Essence	₹ 3,300
Labour 370 hours at	₹ 50 per hour
Normal loss	5% of inputs with no disposal value
Output	18,000 kilograms.

There is no work-in-process at the beginning of the month but 1,000 kilograms in process at the end of the month and estimated to be only 50% complete so far as labour and overhead were concerned.

Overhead of ₹ 92,000 incurred to be absorbed on the basis of labour hours.



**JOINT
PRODUCTS
& BY
PRODUCTS**

Q.4

NB

PN

'Buttery Butter' is engaged in the production of Buttermilk, Butter and Ghee. It purchases processed cream and let it through the process of churning until it separates into buttermilk and butter. For the month of January, 2020, 'Buttery Butter' purchased 50 Kilolitre processed cream @ ₹ 100 per 1000 ml. Conversion cost of ₹ 1,00,000 were incurred up-to the split off point, where two saleable products were produced i.e. buttermilk and butter. Butter can be further processed into Ghee.

The January, 2020 production and sales information is as follows:

Products	Production (in Kilolitre/tonne)	Sales Quantity (in Kilolitre/tonne)	Selling price per Litre/Kg (₹)
Buttermilk	28	28	30
Butter	20	—	—
Ghee	16	16	480

All 20 tonne of butter were further processed at an incremental cost of ₹ 1,20,000 to yield 16 Kilolitre of Ghee. There was no opening or closing inventories of buttermilk, butter or ghee in January, 2020.

Required:

- SHOW how joint cost would be apportioned between Buttermilk and Butter under Estimated Net Realisable Value method.
- 'Healthy Bones' offers to purchase 20 tonne of butter in February at ₹ 360 per kg. In case 'Buttery Butter' accepts this offer, no Ghee would be produced in February. SUGGEST whether 'Buttery Butter' shall accept the offer affecting its operating income or further process butter to make Ghee itself?

Q.6

NB

PN

Key Pee Limited produces and sells the following products:

Products	Units	Selling price at split-off point (₹)	Selling price after further processing (₹)
A	500000	42.5	62.5
B	75000	32.5	42.5
C	62500	20	30
D	50000	25	-
E	187500	35	50

Cost of raw material ₹ 89,75,000 and other manufacturing expenses cost ₹13,67,500 in the manufacturing process which are absorbed on the products on the basis of their 'Net realisable value'. The further processing costs of A, B, C and E are ₹31,25,000; ₹ 3,75,000; ₹1,25,000 and ₹3,75,000 respectively. Fixed costs are ₹11,82,500.

You are required to PREPARE the following in respect of the coming year:

- Statement showing income forecast of the company assuming that none of its products are to be further processed.
- Statement showing income forecast of the company assuming that products A, B, C and E are to be processed further.

Q.10

NB

PN

A company produces two joint product X and Y, from the same basic materials. The processing is completed in three departments. Materials are mixed in department I. At the end of this process X and Y get separated. After separation X is completed in the department II and Y is finished in department III. During a period 2,00,000 kgs of raw material were processed in department I, at a total cost of ₹ 8,75,000, and the resultant 60% becomes X and 30% becomes Y and 10% normally lost in processing.

In department II $\frac{1}{6}$ of the quantity received from department I is lost in processing. X is further processed in department II at a cost of ₹ 1,80,000.

In department III further, new material added to the material received from department I and weight mixture is doubled, there is no quantity loss in the department and further processing cost (with material cost) is ₹1,50,000.

The details of sales during the year:

	Product X	Product Y
Quantity sold (kgs)	90,000	1,15,000
Sales price per kg (₹)	10	4

There were no opening stocks. If these products sold at split-off-point, the selling price of X and Y would be ₹ 8 and ₹ 4 per kg respectively.

Required:

- Prepare a statement showing the apportionment of joint cost to X and Y in proportion of sales value at split off point.
- Prepare a statement showing the cost per kg of each product indicating joint cost, processing cost and total cost separately.
- Prepare a statement showing the product wise profit for the year.
- On the basis of profits before and after further processing of product X and Y, give your comment that products should be further processed or not.

Q.11

NB

PN

Pokemon Chocolates manufactures and distributes chocolate products. It purchases Cocoa beans and processes them into two intermediate products:

Chocolate powder liquor base Milk-chocolate liquor base. These two intermediate products become separately identifiable at a single split off point. Every 500 pounds of cocoa beans yields 20 gallons of chocolate - powder liquor base and 30 gallons of milk-chocolate liquor base.

The chocolate powder liquor base is further processed into chocolate powder. Every 20 gallons of chocolate- powder liquor base yields 200 pounds of chocolate powder. The milk- chocolate liquor base is further processed into milk-chocolate. Every 30 gallons of milk- chocolate liquor base yields 340 pounds of milk chocolate. Production and sales data for October, 2004 are:

Cocoa beans processed	7,500 pounds
Costs of processing Cocoa beans to split off point (including purchase of beans)	₹ 7,12,500

	Production	Sales	Selling price
Chocolate powder	3,000 pounds	3,000 pounds	₹ 190 per pound
Milk chocolate	5,100	5,100	₹ 237.50 per pound

The October, 2004 separable costs of processing chocolate-powder liquor into chocolate powder are ₹ 3,02,812.50. The October 2004 separable costs of processing milk-chocolate liquor base into milk-chocolate are ₹ 6,23,437.50.

Pokemon fully processes both of its intermediate products into chocolate powder or milk- chocolate. There is an active market for these intermediate products. In October, 2004, Pokemon could have sold the chocolate powder liquor base for ₹ 997.50 a gallon and the milk-chocolate liquor base for ₹ 1,235 a gallon.

Required:

- i) Calculate how the joint cost of ₹ 7,12,500 would be allocated between the chocolate powder and milk- chocolate liquor bases under the following methods:
 - a) Sales value at split off point
 - b) Physical measure (gallons)
 - c) Estimated net realisable value, (NRV) and
 - d) Constant gross-margin percentage NRV.
- ii) What is the gross-margin percentage of the chocolate powder and milk-chocolate liquor bases under each of the methods in requirements (i)?
- iii) Could Pokemon have increased its operating income by a change in its decision to fully process both of its intermediate products? Show your computations.

Q.16



ABC Company produces a Product 'X' that passes through three processes: R, S and T. Three types of raw materials, viz., J, K, and L are used in the ratio of 40:40:20 in process R. The output of each process is transferred to next process. Process loss is 10% of total input in each process. At the stage of output in process T, a by-product 'Z' is emerging and the ratio of the main product 'X' to the by-product 'Z' is 80:20. The selling price of product 'X' is ₹60 per kg.

The company produced 14,580 kgs of product 'X'

Material price : Material J @ ₹ 15 per kg; Material K @ ₹ 9 per kg.

Material L @ ₹ 7 per kg Process costs are as follows:

Process	Variable cost per kg (₹)	Fixed cost of Input (₹)
R	5.00	42,000
S	4.50	5,000
T	3.40	4,800

The by-product 'Z' cannot be processed further and can be sold at ₹ 30 per kg at the splitoff stage. There is no realizable value of process losses at any stage.

Required:

Present a statement showing the apportionment of joint costs on the basis of the sales

value of product 'X' and by-product 'Z' at the split- off point and the profitability of product X' and by-product 'Z'.

Q.17



A factory producing article A also produces a by-product B which is further processed into finished product. The joint cost of manufacture is given below:

Material	₹ 5,000
Labour	₹ 3,000
Overhead	₹ 2,000
	<u>₹ 10,000</u>

	A	B
Material	3,000	1,500
Labour	1,400	1,000
Overhead	600	500
	<u>5,000</u>	<u>3,000</u>

Selling prices are A ₹ 16,000

B ₹ 8,000

Estimated profit on selling prices is 25% for A and 20% for B.

Assume that selling and distribution expenses are in proportion of sales prices. Show how you would apportion joint costs of manufacture and prepare a statement showing cost of production of A and B.

12

**SERVICE
COSTING**

Q.8

NB

PN

Mr. X owns a bus which runs according to the following schedule:

i) Delhi to Chandigarh and back, the same day.	
Distance covered:	250 km. One Way
Number of days run each month:	8
Seating capacity occupied	90%.
ii) Delhi to Agra and back, the same day.	
Distance covered:	210 km. One Way
Number of days run each month:	10
Seating capacity occupied	85%
iii) Delhi to Jaipur and back, the same day	
Distance covered:	270 km. One Way
Number of days run each month	6
Seating capacity occupied	100%
iv) Following are the other details:	
Cost of the bus	₹ 12,00,000
Salary of the Driver	₹ 24,000p.m.
Salary of the Conductor	₹ 21,000p.m.
Salary of the part-time Accountant	₹ 5,000p.m.
Insurance of the bus	₹ 4,800p.a.
Diesel consumption 4 km. per litre at	₹ 56 per litre
Road tax	₹ 15,915p.a.
Lubricant oil	₹ 10 per 100km
Permit fee	₹ 315p.m
Repairs and maintenance	₹ 1,000p.m
Depreciation of the bus	@ 20%p.a.
Seating capacity of the bus	50 persons.

Passenger tax is 20% of the total takings. Calculate the bus fare to be charged from each passenger to earn a profit of 30% on total takings. The fares are to be indicated per passenger for the journeys:

- (i) Delhi to Chandigarh
- (ii) Delhi to Agra and
- (iii) Delhi to Jaipur.

Q.9

NB

PN

A transport company has a fleet of three trucks of 10 tonnes capacity each plying in different directions for transport of customer's goods. The trucks run loaded with goods and return empty. The distance travelled, number of trips made and the load carried per day by each truck are as under:

Truck No.	One way Distance Km	No. of trips Per day	Load carried Per trip/ day tonnes
1	16	4	6
2	40	2	9
3	30	3	8

The analysis of maintenance cost and the total distance travelled during the last two years is as under:

Year	Total distance travelled	Maintenance Cost*
1	1,60,200	46,050
2	1,56,700	45,175

The following are the details of expenses for the year under review:

Diesel	₹ 10 per litre. Each litre gives 4 km per litre of diesel on an average
Driver's salary	₹ 2,000 per month
License and taxes	₹ 5,000 per annum per truck
Insurance	₹ 5,000 per annum for all the three vehicles
Purchase Price per truck	₹ 3,00,000, Life 10 years. Scrap value at the end of life is ₹ 10,000
Oil and Sundries	₹ 25 per 100 km run
General Overhead	₹ 11,084 per annum

The vehicles operate 24 days per month on an average.

Required

- Prepare an Annual Cost Statement covering the fleet of three vehicles.
- Calculate the cost per km. run.
- Determine the freight rate per tonne km. to yield a profit of 10% on freight.

- Q.12** Voyager Cabs Pvt. Ltd. is a New Delhi based cab renting company, provides cab facility on rent for cities Delhi, Agra and Jaipur to the tourists. To attract more tourists it has launched a new three days tour package for Delhi-Jaipur-Agra-Delhi. Following are the relevant information regarding the package:

NB PN	Distance between Delhi to Jaipur (Km.)	274
	Distance between Delhi to Agra (Km.)	242
	Distance between Agra to Jaipur (Km.)	238
	Price of Diesel in Delhi	₹ 54 per litre
	Price of Diesel in Jaipur	₹ 56 per litre
	Price of Diesel in Agra	₹ 58 per litre
	Mileage of cab per litre of diesel(Km.)	16
	Chauffeur's salary	₹ 12,000 per month
	Cost of the cab	₹ 12,00,000
	Expected life of the cab	24,00,000kms.
	Servicing cost	₹ 30,000 after every 50,000 kms. run
	Chauffeur's meal allowance	₹ 50 for every 200 kilometres of completed journey
	Other set up and office cost	₹ 24,000 per month

Voyager Cabs has made tie-up with fuel service centres at Agra, Jaipur and Delhi to fill diesel to its cabs on production of fuel pass book to the fuel centre. Company has a policy to get fuel filled up sufficient to reach next destination only.

You are required to calculate the price inclusive of GST @ 18% to be quoted for the package if company wants to earn profit of 25% on its net takings i.e. excluding GST.

- Q.13** Gopal Milk Co-Operative Society (GMCS) collects raw milk from the farmers of Ramgarh, Pratapgarh and Devgarh panchayats and processes these milk to make various dairy products. GMCS has its own vehicles (tankers) to collect and bring the milk to the processing plant. Vehicles are parked in the GMCS's garage situated within the plant compound. Following are the some information related with the vehicles:



	Ramgarh	Pratapgarh	Davgarh
No. of vehicles assigned	4	3	5
No. of trips a day	3	2	2
One way distance from the processing plant	24km.	34km.	16km.
Toll tax paid p.m.(`)	2,850	3,020	-

All the 5 vehicles assigned to Devgarh panchayat, were purchased five years back at a cost of ₹ 9,25,000 each .The 4 vehicles assigned to Ramgarh panchayat, were purchased two years back at a cost of ₹ 11,02,000 each and the remaining vehicles assigned to Pratapgarh were purchased last year at a cost of ₹ 13,12,000 each. With the purchase of each vehicles two years free servicing warranty is provided. A vehicle gives 10 kmpl mileage in the first two year of purchase, 8 kmpl in next two years and 6 kmpl afterwards. The vehicles are subject to depreciation of 10% p.a. on straight line basis irrespective of usage. A vehicle has the capacity to carry 25,000 litres of milk but on an average only 70% of the total capacity is utilized.

The following expenditure is related with the vehicles:

Salary of Driver (a driver for each vehicle)	₹ 18,000p.m.
Salary to Cleaner (a cleaner for each vehicle)	₹ 11,000p.m.
Allocated garage parking fee	₹ 1,350 per vehicle per month
Servicing cost	₹ 3,000 for every complete 5,000 k.m. run.
Price of diesel per litre	₹ 58.00

From the above information you are required to calculate

- Total operating cost per month for each vehicle. (Take 30 days for the month)
- Vehicle operating cost per litre of milk.

- Q.16** Global Transport Ltd. charges ₹ 90 per ton for its 6 - tonnes truck lorry load from city 'A' to city'B'. The charges for the return journey are ₹ 84 per ton. No concession or reduction in these rates is made for any delivery of goods at intermediate station 'C'. In January 2012, the truck made 12 outward journeys for city 'B' with full load out of which 2 tons were unloaded twice in the way at city 'C'. The truck carried a load of 8 tonnes in its return journey for 5 times but was once caught by police and ₹ 1,200 was paid as fine. For the remaining trips the truck carried full load out of which all the goods on load were unloaded once at city 'C', but it returned without any load once only from 'C' station to 'A' station. The distance from city 'A' to city 'C' and city 'B' are 140 km. and 300 km. respectively. Annual fixed costs and maintenance charges are ₹ 60,000 and ₹ 12,000 respectively. Running charges spent during January 2012 are ₹ 2,944.



You are required to find out the cost per absolute tonne- kilometre and the profit for January, 2012.

- Q.20** P Holiday Resorts offers three types of rooms to its guests, viz deluxe room, super deluxe room and luxury suite. You are required to ascertain the tariff to be charged to the customers for different types of rooms on the basis of following information:

NB	Type of Room	Number of Rooms	Occupancy
PN	Deluxe Room	100	90%
	Super Deluxe Room	60	75%
	Luxury Suite	40	60%

Rent of 'super deluxe' room is to be fixed at 2 times of 'deluxe room' and that of 'luxury suite' is 3 times of 'deluxe room'. Annual expenses are as follows:

Particulars	Amount (₹ in lakhs)
Staff salaries	680.00
Lighting, Heating and Power	300.00
Repairs, Maintenance and Renovation	180.00
Linen	30.00
Laundry charges	24.00
Interior decoration	75.00
Sundries	30.28

An attendant for each room was provided when the room was occupied and he was paid ₹ 500 per day towards wages. Further, depreciation is to be provided on building @ 5% on ₹ 900 lakhs, furniture and fixtures @ 10% on ₹ 90 lakhs and air conditioners @ 10% on ₹ 75 lakhs.

Profit is to be provided @ 25% on total taking and assume 360 days in a year.

- Q.22** Following are the information given by owner of M/s. Moonlight Co. running a hotel at Manali. You are requested to advise him regarding the rent to be charged from his customer per day so that he is able to earn 20% profit on cost other than interest.

- | | |
|----|---|
| NB | (i) Staff salaries ₹ 4,00,000. |
| PN | (ii) The Room Attendant's salary is ₹ 10 per day. The salary is paid on daily basis and the services of room attendant are needed only when the room is occupied. There is one room attendant for one room. |
| | (iii) Lighting, Heating and Power: |
| | (a) The normal lighting expenses for a room if it is occupied for the whole month is ₹ 250. |
| | (b) Power is used only in winter and normal charge per month if occupied for a room is ₹ 100. |
| | (iv) Repairs to Building ₹ 50,000 per annum. |
| | (v) Linen ect. ₹ 24,000 per annum. |
| | (vi) Sundries ₹ 70,770 per annum. |
| | (vii) Interior decoration and furnishing ₹ 50,000 per annum. |
| | (viii) Cost of Building ₹ 20,00,000, rate of depreciation 5%. |
| | (ix) Other Equipments ₹ 5,00,000, rate of depreciation 10%. |
| | (x) Interest @ 5% may be charged on its investment of ₹ 25,00,000 in the building and equipment. |
| | (xi) There are 200 rooms in the hotel and 90% of the rooms are normally occupied in summer and 40% of the rooms are occupied in winter. You may assume that period of summer and winter is six months each. Normal days in a month may be assumed to be 30. |

Q.28 ABC Health care runs an Intensive Medical Care Unit. For this purpose, it has hired a building at a rent of ₹ 50,000 per month with the agreement to bear the repairs and maintenance charges also.

NB

PN

The unit consists of 100 beds and 5 more beds can comfortably be accommodated when the situation demands. Though the unit is open for patients all the 365 days in a year, scrutiny of accounts for the year 2020 reveals that only for 120 days in the year, the unit had the full capacity of 100 patients per day and for another 80 days, it had, on an average only 40 beds occupied per day. But, there were occasions when the beds were full, extra beds were hired at a charge of ₹ 50 per bed per day. This did not come to more than 5 beds above the normal capacity on any one day. The total hire charges for the extra beds incurred for the whole year amounted to ₹ 20,000.

The unit engaged expert doctors from outside to attend on the patients and the fees were paid on the basis of the number of patients attended and time spent by them which on an average worked out to ₹ 30,000 per month in the year 2020. The permanent staff expenses and other expenses of the unit were as follows:

	₹
2 Supervisors each at a per month salary of	5,000
4 Nurses each at a per month salary of	3,000
2 Ward boys each at a per month salary of	1,500
Other Expenses for the year were as under:	
Repairs and Maintenance	28,000
Food supplied to patients	4,40,000
Caretaker and Other services for patients	1,25,000
Laundry charges for bed linen	1,40,000
Medicines supplied	2,80,000
Cost of Oxygen etc. other than directly borne for treatment of patients	75,000
General Administration Charges allocated to the unit	71,000

Required:

- What is the profit per patient day made by the unit in the year 2020, if the unit recovered an overall amount of ₹ 200 per day on an average from each patient.
- The unit wants to work on a budget for the year 2021, but the number of patients requiring medical care is a very uncertain factor. Assuming that same revenue and expenses prevail in the year 2021 in the first instance, work out the number of patient days required by the unit to break even.

Q.29

NB

PN

ABC Bank is having a branch which is engaged in processing of 'Vehicle Loan' and 'Education Loan' applications in addition to other services to customers. 30% of the overhead costs for the branch are estimated to be applicable to the processing of 'Vehicle Loan' applications and 'Education Loan' applications each.

Branch is having four employees at a monthly salary of ₹ 50,000 each, exclusively for processing of Vehicle Loan applications and two employees at a monthly salary of ₹ 70,000 each, exclusively for processing of Education Loan applications.

In addition to above, following expense are incurred by the Branch:

- Branch Manager who supervises all the activities of branch, is paid at ₹ 90,000 per month.
- Legal charges, Printing & stationery and Advertising Expenses are incurred at ₹ 30,000, ₹ 12,000 and ₹ 18,000 respectively for a month.
- Other expenses are ₹ 10,000 per month.

You are required to:

- Compute the cost of processing a Vehicle Loan application on the assumption that 496 Vehicle Loan applications are processed each month.
- Find out the number of Education Loan Applications processed, if the total processing cost per Education Loan Application is same as in the Vehicle Loan Application as computed in (i) above.

Q.32

NB

PN

SpeedEx Logistics, established in 2010 and headquartered in Mumbai, India, operates within the transportation and logistics industry as a thirdparty logistics (3PL) provider. The company's fleet consists of 10 trucks, 15 vans, and 5 trailer, each serving distinct purposes. The records of Truck R-40 reveal the following information for July 2024.

Days Maintained	30
Days Operated	25
Total Hours Operated	300
Total Kilometres Covered	2,500
Total Tonnage Carried	
(4 tonne-load per trip, return journey empty 2 round trips per day)	

The following further information is made available:

- Operating Costs for the month: Petrol ₹ 400, oil ₹170, Grease ₹ 90, Wages to driver ₹ 550, Wages to Worker ₹ 350.
- Maintenance Costs for the month: Repair ₹ 170, Overhaul ₹ 60, Tyres ₹ 150, Garage charges ₹ 100.
- Fixed Costs for the month based on the estimates for the year: Insurance ₹ 50, Licence, tax etc. ₹ 80, Interest ₹ 40, Other Overheads ₹ 190
- Capital costs: Cost of acquisition ₹ 54,000; Residual Value at the end of 5 years life ₹ 36,000.

You are required to CALCULATE:

- cost per days maintained
- cost per days operated
- cost per hours operated
- cost per kilometres covered
- cost per commercial tonne km

Q.34 The data given relates to 'Entertainment Paradise' a mini theatre for the year ending 2007:

NB					
PN					
No. of Employee	Salaries:		Electricity and oil		11,655
1	Manager	Rs. 800 p.m.	Carbon		7,235
10	Gate-keepers	200 p.m. each	Misc. expenditure		5,425
2	Operators	400 p.m.	each Advertisement		34,710
4	Clerks	250 p.m.	each Admn. Expenses		18,000
			Hire of print		1,40,700

The premises are valued at Rs. 6,00,000 and the estimated life is 15 years. Projector and other equipments cost Rs. 3,20,000 on which 10% depreciation is to be charged.

Daily 3 shows are run throughout the year. The total capacity is 625 seats which is divided into three classes as follows:

Emerald Circle	250 seats
Diamond	250 seats
Coral	125 seats

Ascertain cost per man-show assuming that:

- 20% of the seats remain vacant, and
- Weightage to be given to the three classes in the ratio 1 : 2 : 3.

Determine the rates for each class if the management expects 30% return on gross proceeds. Ignore entertainment taxes.

Q.37 A company is considering four alternative proposals for a new toy manufacturing Machine launched in the market. New machine is expected to produce approximately 25,000 toys every year. The proposals are as follows:

- | | |
|----|--|
| NB | |
| PN | |
- Purchase and maintain the new toy manufacturing Machine and bear all related costs. These machines will run on fuel. The average cost of a Machine is ₹ 10,00,000. Life of the machine is 4 years with annual production of 25,000 toys and the Resale value is ₹ 2,00,000 at the end of the fourth year.
 - Hire from Agency-A: It can hire the machine from the Agency-A and pay hire charges at the rate of ₹ 20 per toy and bear no other cost.
 - Hire from Agency-B: It can hire the machine from the Agency-B and pay hire charges at the rate of ₹ 12 per toy and also bear insurance costs. All other costs will be borne by Agency-B.
 - Hire from Agency-C: Hire machine from Agency-C at ₹ 2,50,000 per year. These machines are more advanced and run on electricity and therefore, the running cost is considerably low. The company will have to bear costs of electricity, licensing fees and spare parts. However, Repairs and maintenance and Insurance cost are borne by Agency-C.

The following further details are available:

The cost of Fuel is ₹ 8 per toy, the cost of spare parts is ₹ 0.20 per toy and the cost of electricity is ₹ 2 per toy. Further, the cost of Repairs and maintenance is ₹ 0.25 per toy, the amount of licensing fees to be paid is ₹ 5,000 per machine per annum and the cost of Insurance to be paid is ₹ 25,000 per machine per annum. Consider no taxes.

You are required to:

- Calculate the relative costs of four proposals on cost per toy basis.
- Rank the proposals on the basis of total cost for 25,000 toys per year.
- Recommend the best proposal to company in view of (ii) above.

Q.40
★★

M/s. GPS Private Limited is engaged in producing milk powder. The management of the company is considering for transportation of 29,952 Kilolitre (KL) of milk per month to its storage tanks that are situated 30 km away from its collection centres. Two types of milk tankers are available in the market, namely 8-KL and 6-KL of capacity.

The details of operating costs for the milk tankers are as follows:

NB	Particulars	8-KL Tanker	6-KL Tanker
	Purchase Price per tanker	₹ 18,04,000	₹ 12,00,000
PN	Estimated life 6 years 6 years		
	Residual value per tanker	₹ 4,00,000	₹ 3,00,000
	Other fixed costs per month, per tanker	₹ 55,980	₹ 46,540
	Km. per litre of diesel	4 km.	5 km.

Additional Information:

- Cost of diesel per litre is ₹ 80.
- Each vehicle can run 6 trips (up and down) each day and can run on an average of 26 days each month.
- Drivers will have to be recruited according to the number of milk tankers to be used. In addition, one extra driver for every eight milk tankers will be required for the entire fleet. Each driver will cost ₹ 15,000 per month.
- Yet another possibility is to hire enough milk tankers (8-KL capacity only) from a transport company at the rate of ₹ 63,000 per month per milk tanker. The transport company will bear other fixed costs. However, GPS Private Limited has to bear the cost of drivers and other operational costs.

You are required to prepare:

- Statement of operating cost for each alternative for a month.
- Compute the cost per kilolitre of milk transported.
- Advise the company on an appropriate choice among the above three alternatives.

(Note: Ignore finance cost.)

Q. 41
★★

A LMV Pvt. Ltd, operates cab/ car rental service in Delhi/NCR. It provides its service to the offices of Noida, Gurugram and Faridabad. At present it operates CNG fuelled cars but it is also considering to upgrade these into Electric vehicle (EV). The following details related with the owning of CNG & EV propelled cars are as tabulated below:

NB	Particulars	CNG Car	EV Car
	Car purchase price (₹)	9,20,000	15,20,000
PN	Govt. subsidy on purchase of car (₹)	--	1,50,000
	Life of the car	15 years	10 years
	Residual value (₹)	95,000	1,70,000
	Mileage	20 km/kg	240 km per charge
	Electricity consumption per full charge	--	30 Kwh
	CNG cost per Kg (₹)	60	--
	Power cost per Kwh (₹)	--	7.60
	Annual Maintenance cost (₹)	8,000	5,200
	Annual insurance cost (₹)	7,600	14,600
	Tyre replacement cost in every 5 - year (₹)	16,000	16,000
	Battery replacement cost in every 8- year (₹)	12,000	5,40,000

Apart from the above, the following are the additional information:

Particulars	
Average distance covered by a car in a month	1,500 km
Driver's salary (₹)	20,000 p.m
Garage rent per car (₹)	4,500 p.m
Share of Office & Administration cost per car (₹)	1,500 p.m

You have been approached by the management of A LMV Pvt. Ltd. for consultation on the two options of operating the cab service.

CALCULATE the operating cost of vehicle per month per car for both CNG & EV options.

- Q. 42** Royal Transport Services runs fleet of buses within the limits of Jaipur city. The following are the details which were incurred by the company during October, 2021:

NB		(₹)
PN	Cost of each Bus	24,00,000
	Garage Rent	1,00,000
	Insurance	25,000
	Road tax	20,000
	Manager's Salary	60,000
	Assistant's Salary (Two)	32,000 each
	Supervisor's Salary (Three)	24,000 each
	Driver's Salary (Twenty-Five)	20,000 each
	Cleaner's Salary (Twenty)	5,000 each
	Office Staff's Salary	1,00,000
	Consumables	1,20,000
	Repairs & Maintenance	90,000
	Other Fixed Expenses	72,000
	Diesel (10 Kms per Litre)	80 per litre
	Oils & Lubricants	1,45,000
	Tyres and tubes	35,000
	Depreciation	10% p.a. on Cost

Other details are as below:

	Capacity
12 Buses	60 Passengers
13 Buses	50 Passengers

Each bus makes 4 round trips a day covering a distance of 10 Kilometers in each trip (One Way) on an average. During the trips 80% of the seats are occupied. The annual records show that 5 buses are generally required to be kept away from roads each day for repairs.

You are required to CALCULATE cost per passenger-km.

Cost sheet to be prepared on the basis of 25 buses.

13

STANDARD COSTING

- Q.4** Jigyasa Pharmaceuticals Ltd. is engaged in producing dietary supplement 'Funkids' for growing children. It produces 'Funkids' in a batch of 10 kgs. Standard material inputs required for 10 kgs. of 'Funkids' are as below:

NB	Material	Quantity (in kgs.)	Rate per kg. (in ₹)
PN	Vita-X	5	110
	Proto-D	3	320
	Mine-L	3	460

During the month of March, 2014, actual production was 5,000 kgs. of 'Funkids' for which the actual quantities of material used for a batch and the prices paid thereof are as under:

Material	Quantity (in kgs.)	Rate per kg. (in ₹)
Vita-X	6	115
Proto-D	2.5	330
Mine-L	2	405

You are required to calculate the following variances based on the above given information for the month of March, 2014 for Jigyasa Pharmaceuticals Ltd.:

- Material Cost Variance;
- Material Price Variance;
- Material Usage Variance;
- Material Mix Variance;
- Material Yield Variance.

- Q.6** The standard cost of a chemical mixture is as follows:

40% material A at ₹ 20 per kg.

60% material B at ₹ 30 per kg.

A standard loss of 10% of input is expected in production. The cost records for a period showed the following usage:

90 kg material A at a cost of ₹ 18 per kg.

110 kg material B at a cost of ₹ 34 per kg.

The quantity produced was 182 kg. of good product.

Calculate all material variances.

- Q.10** J.K. Ltd. manufactures NXE by mixing three raw materials. For every batch of 100 kg. of NXE, 125 kg. of raw materials are used. In April, 2012, 60 batches were prepared to produce an output of 5,600 kg. of NXE. The standard and actual particulars for April, 2012, are as follows:

NB	Raw Materials	Standard Mix (%)	Price per kg. (₹)	Actual Mix (%)	Price per kg (₹)
PN	A	50	20	60	21
	B	30	10	20	8
	C	20	5	20	6

Calculate all variances.

- Q.11** XYZ Ltd. produces two products M and N by using two inputs Material A and B. The standard price per unit of Material A is ₹ 20 and of Material B is ₹ 10. The standard quantities of materials for each product are as follows:

NB	Products	Materials	
PN		A (units)	B (Units)
	M	2	3
	N	1	4

The company actually produced 11,000 units of M and 9,000 units of N and used 32,500 units of Material A at a cost of ₹ 6,59,750 and 67,000 units of Material B at a cost of ₹ 6,83,400.

Calculate:

- Material Price Variance;
- Material Usage Variance;
- Material Cost Variance;

- Q.12** XYZ Ltd. produces a product X by using two raw materials A and B. The following standards have been set for the production:

NB	Material	Standard Mix	Standard Price (₹)
PN	A	40%	40 per kg
	B	60%	30 per kg

The standard loss in processing is 15%.

During July, 2016 the company produced 2,000 kg of finished output.

The positions of stock and purchases for the month of July, 2016 are as under:

Material	Stock on 1st July 2016	Stock on 31st July 2016	Purchases during July 2016	
			Quantity	Amount (₹)
A	40 kg.	10 kg.	900 kg.	42.50
B	50 kg.	60 kg.	1,400 kg.	25.00

Calculate the following variances:

- Material Price Variance;
- Material Usage Variance;
- Material Mix Variance;
- Material Yield Variance;
- Total Material Cost Variance;

The company follows FIFO method of stock valuation.

- Q.16** The standard labour employment and the actual labour engaged in a week for a job are as under

NB		Skilled workers	Semi-skilled	Unskilled
PN	Standard no. of workers in the gang	32	12	6
	Actual no. of workers employed	28	18	4
	Standard wage rate per hour	3	2	1
	Actual wage rate per hour	4	3	2

During the 40 hours working week, the gang produced 1,800 standard labour hours of work. Calculate:

- Labour Cost Variance
- Labour Rate Variance
- Labour Efficiency Variance
- Labour Mix Variance
- Labour Yield Variance

- Q.17** A manufacturing department of a company has employed 120 workers. The standard output of product "NPX" is 20 units per hour and the standard wage rate is ₹ 25 per labour hour.

In a 48 hours week, the department produced 1,000 units of 'NPX' despite 5% of the time paid being lost due to an abnormal reason. The hourly wages actually paid were ₹ 25.70 per hour.

Calculate:

- Labour Cost Variance
- Labour Rate Variance
- Labour Efficiency Variance
- Labour Idle time Variance

- Q.18** The standard labour employment and the actual labour engaged in a 40 hours week for a job are as under:

NB	Standard			Actual	
PN	Category of workers	No. of workers	Wage Rate per hour (₹)	No. of workers	Wage Rate per hour (₹)
	Skilled	65	45	50	50
	Semi-skilled	20	30	30	35
	Unskilled	15	15	20	10

Standard output: 2000 units;

Actual output: 1800 units

Abnormal Idle time 2 hours in the week

Calculate:

- Labour Cost Variance
- Labour Efficiency Variance
- Labour Idle Time Variance

Q.20

NB

PN

The standard output of a Product 'D' is 50 units per hour in manufacturing department of a Company employing 100 workers. In a 40 hours week, the department produced 1,920 units of product 'D' despite 5% of the time paid was lost due to an abnormal reason. The hourly wage rates actually paid were ₹ 12.40, ₹ 12.00 and ₹ 11.40 respectively to Group 'A' consisting 10 workers, Group 'B' consisting 30 workers and Group 'C' consisting 60 workers. The standard wage rate per labour is same for all the workers. Labour Efficiency Variance is given ₹ 480 (F).

You are required to COMPUTE:

- (i) Total Labour Cost Variance.
- (ii) Total Labour Rate Variance.
- (iii) Total Labour Gang Variance.
- (iv) Total Labour Yield Variance, and
- (v) Total Labour Idle Time Variance.

Q.24

NB

PN

A company has a normal capacity of 120 machines, working 8 hours per day of 25 days in a month. The fixed overheads are budgeted at ₹ 1,44,000 per month. The standard time required to manufacture one unit of product is 4 hours.

In April, 2012, the company worked 24 days of 840 machine hours per day and produced 5,305 units of output. The actual fixed overheads were ₹ 1,42,000.

Compute:

- i) Expense variance
- ii) Volume variance
- iii) Total fixed overheads variance.

Q.25

The following data has been collected from the cost records of a unit for computing the various fixed overhead variances for a period:

Number of budgeted working days	25
Budgeted man-hours per day	6,000
Output (budgeted) per man-hour (in units)	1
Fixed overhead cost as budgeted	₹ 1,50,000

Actual number of working days	27
Actual man-hours per day	6,300
Actual output per man-hour (in-units)	0.9
Actual fixed overhead incurred	₹ 1,56,000

Calculate fixed overhead variances:

- a) Expenditure Variance
- b) Volume Variance,
- c) Fixed Cost Variance.

Q.27 In a manufacturing company the standard units of production of the year were fixed at 1,20,000 units and overhead expenditures were estimated to be:



Fixed Rs. 12,00,000; Variable Rs. 6,00,000;
Semi-Variable Rs. 1,80,000

Actual production during the April, 2019 of the year was 8,000 units. Each month has 20 working days.

During the month there was one public holiday. The actual overheads amounted to:

Fixed Rs. 1,10,000; Variable Rs. 48,000
Semi-variable Rs. 19,200

Semi-variable charges are considered to include 60 per cent expenses of fixed nature and 40 per cent of variable character.

CALCULATE the followings:

- (i) Overhead Cost Variance
- (ii) Fixed Overhead Cost Variance
- (iii) Variable Overhead Cost Variance
- (iv) Fixed Overhead Volume Variance
- (v) Fixed Overhead Expenditure Variance
- (vi) Calendar Variance.

Q.29 SJ Ltd. has furnished the following information:



NB	Standard overhead absorption rate per unit	₹ 20
	Standard rate per hour	₹ 4
PN	Budgeted production	15,000 units
	Actual production	15,560 units

Actual overheads were ₹ 2,95,000 out of which ₹ 62,500 fixed.

Actual hours 74,000

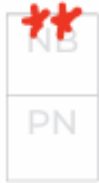
Overheads are based on the following flexible budget.

Production (units)	8,000	10,000	14,000
Total Overheads (₹)	1,80,000	2,10,000	2,70,000

You are required to calculate the following overhead variances (on hour's basis) with appropriate workings:

- (i) Variable overhead efficiency and expenditure variance.
- (ii) Fixed overhead efficiency and capacity variance.

Q.32 SARA Ltd. has furnished the following standard cost data per unit of production:



Material 15 kg @ ₹ 15 per kg.

Labour 6 hours @ ₹ 5 per hour

Variable overhead 6 hours @ ₹ 12 per hour.

Fixed overhead ₹ 4,50,000 per month (Based on a normal volume of 30,000 labour hours.)

The actual cost data for the month of August 2023 are as follows:

Material used 65,000 kg at a cost of ₹ 9,85,000.

Labour paid ₹ 1,40,000 for 31,500 hours worked.

Variable overheads ₹ 3,60,200

Fixed overheads ₹ 4,70,000

Actual production 4,800 units.

CALCULATE:

- (i) Material Cost Variance.
- (ii) Labour Cost Variance.
- (iii) Fixed Overhead Cost Variance.
- (iv) Variable Overhead Cost Variance.

Q.34 Aaradhya Ltd. manufactures a commercial product for which the standard cost per unit is as follows:



	(₹)
Material:	
5 kg. @ ₹ 4 per kg.	20.00
Labour:	
3 hours @ ₹10 per hour	30.00
Overhead	
Variable: 3 hours @ ₹1	3.00
Fixed: 3 hours @ ₹0.50	1.50
Total	54.50

During Jan. 20X8, 600 units of the product were manufactured at the cost shown below:

	(₹)
Materials purchased:	
5,000 kg. @ ₹4.10 per kg.	20,500
Materials used:	
3,500 kg.	
Direct Labour:	
1,700 hours @ ₹ 9	15,300
Variable overhead	1,900
Fixed overhead	900
Total	38,600

The flexible budget required 1,800 direct labour hours for operation at the monthly activity level used to set the fixed overhead rate.

COMPUTE:

- (a) Material price variance;
- (b) Material Usage variance;
- (c) Labour rate variance;
- (d) Labour efficiency variance;
- (e) Variable overhead expenditure variance;
- (f) Variable overhead efficiency variance;
- (g) Fixed overhead expenditure variance;
- (h) Fixed overhead volume variance;
- (i) Fixed overhead capacity variance; and
- (j) Fixed overhead efficiency variance.

Also RECONCILE the standard and actual cost of production.

Q.39 Following data is extracted from the books of RAMZY Ltd. for the month of March:



(i) Estimation-

NB	Particulars	Quantity (kg.)	Price (₹)	Amount (₹)
PN	Material-A	1320	?	--
	Material-B	990	50	49,500
				--

Normal loss was expected to be 5% of total input materials.

(ii) Actuals-

2,500 kg of output produced.

Particulars	Quantity (kg.)	Price (₹)	Amount (₹)
Material-A	1500	?	--
Material-B	?	53	--
			98,000

(iii) Other Information-

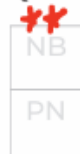
Material Cost Variance = ₹ 5,500 (F)

Material Price Variance = ₹ 300 (F)

You are required to CALCULATE:

- (i) Standard Price of Material-A;
- (ii) Actual Quantity of Material-B;
- (iii) Actual Price of Material-A;
- (iv) Revised standard quantity of Material-A and Material-B; and
- (v) Material Mix Variance.

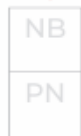
Q.38 Compute the missing data indicated by the question marks from the following:



Particulars	A	B
Standard Price/unit	₹ 12	₹ 15
Actual Price /unit	₹ 15	₹ 20
Standard Input (kgs.)	50	?
Actual Input (kgs.)	?	70
Material Price Variance	?	?
Material Usage Variance	?	₹ 300 Adverse
Material Cost Variance	?	?

Material mix variance for both products together was ₹ 45 Adverse

Q.40 Ahaan Limited operates a system of standard costing in respect of one of its products 'AH1' which is manufactured within a single cost centre. Details of standard per unit are as follows:



- The standard material input is 20 kilograms at a standard price of ₹ 24 per kilogram.
- The standard wage rate is ₹ 72 per hour and 5 hours are allowed to produce one unit.
- Fixed production overhead is absorbed at the rate of 100% of wages cost.

During the month of April 2022, the following was incurred:

- Actual price paid for material purchased @ ₹ 22 per kilogram.
- Total direct wages cost was ₹ 43,92,000
- Fixed production overhead cost incurred was ₹ 45,00,000

Analysis of variances was as follows:

Variances	Favourable	Adverse
Direct material price	₹ 4,80,000	-
Direct material usage	₹ 48,000	
Direct labour rate	-	₹ 69,120
Direct labour efficiency	₹ 33,120	-
Fixed production overhead expenditure		₹ 1,80,000

You are required to CALCULATE the following for the month of April, 2022

- Material cost variance
- Budgeted output (in units)
- Quantity of raw materials purchased (in kilograms)
- Actual output (in units)
- Actual hours worked
- Actual wage rate per labour hour
- Labour cost variance
- Production overhead cost variance

- Q.41** Z. Ltd. uses standard costing system in manufacturing of its single product 'M'. The standard cost per unit of M is as follow:

	Rs.
Direct Material – 2 metres @ Rs. 6 per metre	12.00
Direct labour- 1 hour @ Rs. 4.40 per hour	4.40
Variable overhead- 1 hour @ Rs. 3 per hour	3.00

During July, 2016, 6,000 units of M were produced and the related data are as under:

Direct material acquired- 19,000 metres @ Rs.5.70 per metre.

Material consumed – 12,670 metres.

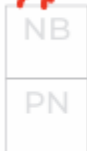
Direct labour– ? hours @ Rs. ? per hour Rs. 27,950

Variable overheads incurred Rs. 20,475

The variable overhead efficiency variance is Rs. 1,500 adverse. Variable overheads are based on direct labour hours. There was no stock of the material in the beginning

You are required to compute the missing figures and work out all the relevant variances.

- Q.44** NC Limited uses a standard costing system for the manufacturing of its product 'X'. The following information is available for the last week of the month:



- 25,000 kg of raw material were actually purchased for ₹ 3,12,500. The expected output is 8 units of product 'X' from each one kg of raw material. There is no opening and closing inventories. The material price variance and material cost variance, as per cost records, are ₹ 12,500 (F) and ₹ 1800 (A), respectively.
- The standard time to produce a batch of 10 units of product 'X' is 15 minutes. The standard wage rate per labour hour is 50. The company employs 125 workers in two categories, skilled and semi-skilled, in a ratio of 60:40. The hourly wages actually paid were ₹ 50 per hour for skilled workers and ₹ 40 per hour for semiskilled workers. The weekly working hours are 40 hours per worker. Standard wage rate is the same for skilled and semi- skilled workers.
- The monthly fixed overheads are budgeted at ₹ 76,480 Overheads are evenly distributed throughout the month and assume 4 weeks in a month. In the last week of the month, the actual fixed overhead expenses were ₹ 19,500.

Required:

- Calculate the standard price per kg and the standard quantity of raw material.
- Calculate the material usage variance, labour cost variance, and labour efficiency variance.
- Calculate the fixed overhead cost variance, the fixed overhead expenditure variance and the fixed overhead volume variance.

Note: Indicate the nature of variance i.e Favourable or Adverse.

Q.46 Y Ltd manufactures "Product M" which requires three types of raw materials - "A", "B" & "C". Following information related to 1st quarter of the F.Y. 2022-23 has been collected from its books of accounts. The standard material input required for 1,000 kg of finished product 'M' are as under:



Material	Quantity (Kg.)	Std. Rate per Kg. (₹)
A	500	25
B	350	45
C	250	55
	1100	
Standard Loss	100	
Standard Output	1000	

During the period, the company produced 20,000 kg of product "M" for which the actual quantity of materials consumed and purchase prices are as under:

Material	Quantity (Kg.)	Purchase price per Kg. (₹)
A	11,000	23
B	7,500	48
C	4,500	60

- You are required to calculate:
- (i) Material Cost Variance
 - (ii) Material Price Variance for each raw material and Product 'M'
 - (iii) Material Usage Variance for each raw material and Product 'M'
 - (iv) Material Yield Variance
- Note: Indicate the nature of variance i.e. Favourable or Adverse.

Q.48 Following are the details given:



Budgeted Days	25
Budgeted Fixed Overheads	1,00,000
Budgeted Production	800 units per day
Actual Production	21,000 units
Fixed Overheads are absorbed @ ₹ 10 per hour.	
Fixed overheads efficiency variance	10,000A
Fixed overheads calendar variance	8,000F
Fixed overheads cost variance	15,000A

NB

PN

- You are required to CALCULATE:
- (a) Actual Fixed Overheads
 - (b) Actual Days
 - (c) Actual Hours
 - (d) Fixed overheads Expenditure variance
 - (e) Fixed overheads volume variance
 - (f) Fixed overheads capacity variance

14

MARGINAL COSTING

- Q.7**  ABC Baggage Ltd. sells different styles of laptop bags with identical purchase costs and selling prices. The company is trying to find out the profitability of opening another store which will have the following expenses and revenues:

	Amount per piece (₹)
Selling Price	600
Variable costs:	
Material cost	410
Salesmen's commission	60
Total variable cost	470
Annual fixed expenses are:	(₹)
- Rent	6,00,000
- Office and administrative expenses	20,00,000
- Advertising	8,00,000
- others fixed expenses	2,00,000

For the each following independent situation you are required to:

- Calculate the annual break-even point in units and in value. Also Determine the profit or loss if 35,000 units of bags are sold.
- The sales commissions are proposed to be discontinued, but instead a fixed amount of ₹ 9,00,000 is to be incurred in fixed salaries. A reduction in selling price of 5% is also proposed. What will be the break-even point in units?
- It is proposed to pay the store manager ₹ 5 per piece as further commission. The selling price is also proposed to be increased by 5%. What would be the break-even point in units?

- Q.8**  A laboratory carrying out various tests on products produced by various drug companies to ascertain whether drugs are fit for medical use or not. At present, the laboratory carries out 10,000 tests each year and a survey carried out by the laboratory shows a rise in number of tests to 15,000 tests a year, to carrying out all these tests would require an additional shift to be worked.

NB

PN

The current cost of carrying out a full test is:

	₹ per test
Materials	1,500
Technicians' fees	130
Variable expenses	25
Fixed cost	100

Working the additional shift would

- require a shift premium of 50 per cent to be paid to the technicians on the additional shift;
 - enable a quantity discount of 10 per cent to be obtained for all materials if an order was placed to cover 15,000 tests;
 - increase fixed costs by ₹ 5,00,000 per year.
- The current fee per test is ₹ 2,000.

- Q.13** MFN Limited started its operation in 2011 with the total production capacity of 2,00,000 units. The following data for two years is made available to you:

NB		2011	2012
PN	Sales units	80,000	1,20,000
	Total cost (₹)	34,40,000	45,60,000

There has been no change in the cost structure and selling price and it is expected to continue in 2013 as well. Selling price is ₹ 40 per unit.

You are required to calculate:

Break-Even Point (in units)

Profit at 75% of the total capacity in 2013

- Q.15** When volume is 4,000 units; average cost is ₹ 3.75 per unit. When volume is 5,000 units, average cost is ₹ 3.50 per unit. The Break-Even point is 6,000 units. Calculate: (i) Variable Cost per unit (ii) Fixed Cost and (iii) Profit Volume Ratio.

- Q.20** The ratio at variable cost to sales is 60%. The break-even point occurs at 80% of the capacity sales.

- (i) Find the capacity sales when fixed costs are ₹ 1,60,000
(ii) Compute profit at 80% of the capacity sales.
(iii) Find profit if sales is ₹ 5,70,000 and fixed cost remain same as above.
(iv) Find sales. if desired profit ₹ 44,000 and fixed cost is ₹1.42.000

- Q.22** A company produces single product which sells for ₹ 20 per unit. Variable cost is ₹ 15 per unit and Fixed overhead for the year is ₹ 6,30,000.

Required:

- i) Calculate sales value needed to earn a profit of 10% on sales.
ii) Calculate sales price per unit to bring BEP down to 1,20,000 units.
iii) Calculate margin of safety sales if profit is ₹ 60,000.

- Q.26** A Chinese soft drink company is planning to establish a subsidiary company in India to produce mineral water. Based on the estimated annual sales of 40,000 bottles of the mineral water, cost studies produced the following estimates for the Indian subsidiary:

NB		Total annual costs	Percent of Total Annual Cost which is variable
PN	Material	2,10,000	100%
	Labour	1,50,000	80%
	Factory Overheads	92,000	60%
	Administration Expenses	40,000	35%

The Indian production will be sold by manufacturer's representatives who will receive commission of 8% of the sale price. No portion of the Chinese office expenses is to be allocated to the Indian subsidiary.

You are required to

- i) Compute the sale price per bottle to enable the management to realize an estimated 10% profit on sale proceeds in India.
ii) Calculate the break-even point in Rupee sales as also in number of bottles for the Indian subsidiary on the assumption that the sale price is ₹ 14 per bottle.

Q.29 J Ltd. manufactures a Product-Y. Analysis of income statement indicated a profit of ₹ 250 lakhs on a sales volume of 5,00,000 units. Fixed costs are ₹ 1,000 lakhs which appears to be high. Existing selling price is ₹ 680 per unit. The company is considering revising the profit target to ₹ 700 lakhs. You are required to COMPUTE –

✖✖
NB
PN

- Break- even point at existing levels in units and in rupees.
- The number of units required to be sold to earn the target profit.
- Profit with 10% increase in selling price and drop in sales volume by 10%.
- Volume to be achieved to earn target profit at the revised selling price as calculated in (ii) above, if a reduction of 10% in the variable costs and ₹ 170 lakhs in the fixed cost is envisaged.

Q.30 PQR Ltd. has furnished the following data for the two years:

✖✖
NB
PN

	2011	2012
Sales	₹ 8,00,000	?
Profit/Volume Ratio (P/V ratio)	50%	37.5%
Margin of Safety sales as a % of total sales	40%	21.875%

There has been substantial savings in the fixed cost in the year 2012 due to the restructuring process. The company could maintain its sales quantity level of 2011 in 2012 by reducing selling price.

You are required to calculate the following:

- Sales for 2012 in ₹
- Fixed cost for 2012
- Break-even sales for 2012 in Rupees.

Q.32 The following information is given by Star Ltd.:

✖✖
NB
PN

Margin of Safety ₹ 1,87,500
Total Cost ₹ 1,93,750
Margin of Safety 3,750 units
Break-even Sales 1,250 units Required :
Calculate Profit, P/V Ratio, BEP Sales (in ₹) and Fixed Cost.

Q.35 A dairy product company manufacturing baby food with a shelf life of one year furnishes the following information:

✖✖
NB
PN

- On 1st January, 2016, the company has an opening stock of 20,000 packets whose variable cost is ₹ 180 per packet.
- In 2015, production was 1,20,000 packets and the expected production in 2016 is 1,50,000 packets. Expected sales for 2016 is 1,60,000 packets.
- In 2015, fixed cost per unit was ₹ 60 and it is expected to increase by 10% in 2016. The variable cost is expected to increase by 25%. Selling price for 2016 has been fixed at ₹ 300 per packet.

You are required to calculate the Break-even volume in units for 2016.

- Q.41** A company, with 90% Capacity utilization, is manufacturing a product and makes a sale of ₹ 9, 45, 000 at ₹ 30 per unit. The cost data is as under :

NB	Materials	₹ 9.00 per unit
PN	Labour	₹ 7.00 per unit
	Semi variable cost	
	(including variable cost of ₹ 4.25 per unit)	₹ 2,10,000

Fixed cost is ₹ 94,500 upto 90 % level of output (capacity). Beyond this, an additional amount of ₹ 15,000 will be incurred.

You are required to calculate :

- Level of output at break – even point
- Number of units to be sold to earn a net income of 10% of sales
- Level of output needed to earn a profit of ₹ 1,41,375

- Q.48** M.K. Ltd. manufactures and sells a single product X whose selling price is ₹ 40 per unit and the variable cost is ₹ 16 per unit.

- | | | |
|----|------|---|
| NB | (i) | If the Fixed Costs for this year are ₹ 4,80,000 and the annual sales are at 60% margin of safety, calculate the rate of net return on sales, assuming an income tax level of 40% |
| PN | (ii) | For the next year, it is proposed to add another product line Y whose selling price would be ₹ 50 per unit and the variable cost ₹ 10 per unit. The total fixed costs are estimated at ₹ 6,66,600. The sales mix of X : Y would be 7 : 3. At what level of sales next year, would M.K. Ltd. break even? Give separately for both X and Y the break- even sales in rupee and quantities. |

- Q.51** The profit for the year of R.J. Ltd. works out to 12.5% of the capital employed and the relevant figures are as under:

NB	Sales	₹ 5,00,000
PN	Direct Materials	₹ 2,50,000
	Direct Labour	₹ 1,00,000
	Variable Overheads	₹ 40,000
	Capital Employed	₹ 4,00,000

The new Sales Manager who has joined the company recently estimates for next year a profit of about 23% on capital employed, provided the volume of sales is increased by 10% and simultaneously there is an increase in Selling Price of 4% and an overall cost reduction in all the elements of cost by 2%.

Required

Find out by computing in detail the cost and profit for next year, whether the proposal of Sales Manager can be adopted.

- Q.54** XY Ltd. makes two products X and Y, whose respective fixed costs are F1 and F2. You are given that the unit contribution of Y is one fifth less than the unit contribution of X, that the total of F1 and F2 is ₹ 1,50,000, that the BEP of X is 1,800 units (for BEP of X F2 is not considered) and that 3,000 units is the indifference point between X and Y. (i.e. X and Y make equal profits at 3,000 unit volume, considering their respective fixed costs). There is no inventory build up as whatever is produced is sold.

Required

Find out the values F1 and F2 and units contributions of X and Y.

Q.55 X Ltd. supplies spare parts to an air craft company Y Ltd. The production capacity of X Ltd. facilitates production of any one spare part for a particular period of time. The following are the cost and other information for the production of the two different spare parts A and B:

NB
PN

Per unit	Part A	Part B
Alloy usage	1.6 kgs.	1.6 kgs.
Machine Time: Machine A	0.6 hrs.	0.25 hrs.
Machine Time: Machine B	0.5 hrs.	0.55 hrs.
Target Price (₹)	145	115
Total hours available:	Machine A 4,000 hours Machine B 4,500 hours	

Alloy available is 13,000 kgs. @ ₹ 12.50 per kg.

Variable overheads per machine hours: Machine A: ₹ 80
Machine B: ₹ 100

Required

- Identify the spare part which will optimize contribution at the offered price.
- If Y Ltd. reduces target price by 10% and offers ₹ 60 per hour of unutilized machinehour, what will be the total contribution from the spare part identified above?

Q.56 Moon Ltd. produces products 'X', 'Y' and 'Z' and has decided to analyse it's production mix in respect of these three products - 'X', 'Y' and 'Z'.

✖✖

You have the following information :

	X	Y	Z
Direct Materials ₹ (per unit)	160	120	80
Variable Overheads ₹ (per unit)	8	20	12
Direct labour :			

NB
PN

Departments:	Rate per Hour (₹)	Hours per unit	Hours per unit	Hours per unit
		X	Y	Z
Department-A	4	6	10	5
Department-B	8	6	15	11

From the current budget, further details are as below :

	X	Y	Z
Annual Production at present (in units)	10,000	12,000	20,000
Estimated Selling Price per unit (₹)	312	400	240
Sales departments estimate of possible sales in the coming year (in units)	12,000	16,000	24,000

There is a constraint on supply of labour in Department-A and its manpower cannot be increased beyond its present level.

Required:

- Identify the best possible product mix of Moon Ltd.
- Calculate the total contribution from the best possible product mix.

Q.57



NB

PN

A company manufactures and sells a product, the price of which is controlled by the Government. Raw material required for this product is also made available at a fixed controlled price. The following figures have been called for the previous two accounting years of the company:

	Year- I	Year- II
Quantity Sold (tones)	1,26,000	1,44,000
Price per tone	₹ 185	₹ 185
(₹ In thousands)		
Sales Value	23,310	26,640
Raw Materials	11,340	12,960
Direct Labour	1,512	1,872
Factory, Administration and Selling Expenses	9,702	11,232
Profit	756	576

During the year II direct labour rates increased by 8 1/3%. Increases in factory, administration and selling expenses during the year were ₹ 8,10,000 on account of factors other than the increased quantities produced and sold. The managing director desires to know, what quantity if they had produced and sold would have given the company the same net profit per tonne in Year II as it earned during the Year I Advise him.

Q.59



A company makes 1,500 units of a product for which the profitability statement is given below:

	(₹)
Sales	1,20,000
Direct Materials	30,000
Direct Labour	35,000
Variable Overheads	15,000
Fixed Cost	16,800
Profit	22,200

After the first 500 units of production, the company has to pay a premium of ₹ 5 per unit towards overtime labour. The premium so paid has been included in the direct labour cost of ₹ 35,000 given above.

Q.64



NB

PN

The lab corner of Newlife Hospital Trust operates two types of specialist MRI scanning machine- MR10 and MR59. Following details are estimated for the next period:

Machine	MR10	MR59
Running hours	1,100	2,000
	(₹)	(₹)
Variable running costs excluding special technology	68,750	1,60,000
Fixed Costs	50,000	2,43,750

A brain scan is normally carried out on machine type MR10. This task uses special technology costing ₹ 100 each and takes four hours of machine time. Because of the nature of the process, around 10% of the scans produce blurred and therefore useless results.

Required:

- CALCULATE the total cost of a satisfactory brain scan on machine type MR10.
- Brain scans can also be done on machine type MR59 and would take only 1.8 hours per scan with a reduced reject rate of 6%. However, the cost of the special technology would be ₹ 137.50 per scan. ADVISE which type should be used, assuming sufficient capacity is available on both types of machines. Consider fixed costs will remain unchanged.

- Q.61** An agriculture based company having 210 hectares of land is engaged in growing three different cereals namely, wheat, rice and maize annually. The yield of the different crops and their selling prices are given below:



	Wheat	Rice	Maize
Yield (in kgs per hectare)	2,000	500	100
Selling Price (₹ per kg)	20	40	250

The variable cost data of different crops are given below:

(All figures in ₹ per kg)

Crop	Labour charges	Packing Materials	Other variable expenses
Wheat	8	2	4
Rice	10	2	1
Maize	120	10	20

Crop	Maximum Area (in hectares)	Minimum Area (in hectares)
Wheat	160	100
Rice	50	40
Maize	60	10

You are required to:

- Rank the crops on the basis of contribution per hectare.
- Determine the optimum product mix considering that all the three cereals are to be produced.
- Calculate the maximum profit which can be achieved if the total fixed cost per annum is ₹ 21,45,000.

(Assume that there are no other constraints applicable to this company)

- Q.63** RPP Manufacturers is approached by an international customer for one-time special order similar to one offered to its domestic customers. Per unit data for sales to regular customers is provided below:



Direct material	₹ 693
Direct labour	₹ 315
Variable manufacturing support	₹ 504
Fixed manufacturing support	₹ 1092
Total manufacturing costs	₹ 2604
Markup (50%)	₹ 1302
Targeted selling price	₹ 3906

It is provided that RPP Manufacturers has excess capacity.

Required:

- WHAT is the full cost of the product per unit?
- WHAT is the contribution margin per unit?
- WHICH costs are relevant for making the decision regarding this one-time special order? WHY?
- For RPP Manufacturers, WHAT is the minimum acceptable price of this onetime-special order only
- For this one-time-only special order, SHOULD RPP Manufacturers consider a price of ₹ 2100 per unit? WHY or why not?

Q.68



Top-tech a manufacturing company is presently evaluating two possible machines for the manufacture of superior Pen-drives. The following information is available:

NB

PN

Particulars	Machine A	Machine B
Selling price per unit	₹ 400.00	₹ 400.00
Variable cost per unit	₹ 240.00	₹ 260.00
Total fixed costs per year	₹ 350 lakhs	₹ 200 lakhs
Capacity (in units)	8,00,000	10,00,000

Required:

- Recommend which machine should be chosen?
- Would you change your answer, if you were informed that in near future demand will be unlimited and the capacities of the two machines are as follows?
Machine A - 12,00,000 units
Machine B - 12,00,000 units
Whv?

Q.69



Two manufacturing companies A and B are planning to merge. The details are as follows:

NB

PN

	A	B
Capacity utilisation (%)	90	60
Sales (₹)	63,00,000	48,00,000
Variable Cost (₹)	39,60,000	22,50,000
Fixed Cost (₹)	13,00,000	15,00,000

Assuming that the proposal is implemented, calculate:

- Break-Even sales of the merged plant and the capacity utilization at that stage.
- Profitability of the merged plant at 80% capacity utilization.
- Sales Turnover of the merged plant to earn a profit of ₹ 60,00,000.
- When the merged plant is working at a capacity to earn a profit of ₹ 60,00,000, what percentage of increase in selling price is required to sustain an increase of 5% in fixed overheads.

Q.73



Arnav Ltd. is producing a single product, has the profit-volume ratio of 40%. The company wishes to increase the selling price by 10% which will increase the variable cost by 5%. The fixed overheads will increase from its present level of Rs.20,00,000 to Rs.30,00,000.

NB

PN

Required:

- Compute the company's original break-even point sales and the break-even point sales after the increase.
- You are also required to ascertain the sales value for the firm to make a profit of Rs.4,50,000 after the increase.

Q.74



The M-Tech Manufacturing Company is presently evaluating two possible processes for the manufacture of a toy. The following information is available:

NB

PN

Particulars	Process A (₹)	Process B (₹)
Variable cost per unit	12	14
Sales price per unit	20	20
Total fixed costs per year	30,00,000	21,00,000
Capacity (in units)	4,30,000	5,00,000
Anticipated sales (Next year, in units)	4,00,000	4,00,000

Suggest:

- Identify the process which gives more profit.
- Would you change your answer as given above, if you were informed that the capacities of the two processes are as follows:
A - 6,00,000 units; B - 5,00,000 units?

Q.71 A company which manufactures and sells three products furnishes the following details for a month:



NB
PN

Products	A	B	C
Number of units sold	50,000	19,000	23,000
Selling Price per unit (₹)	25	40	30
Variable cost per unit (₹)	17	26	12

The fixed costs of the company amount to ₹ 6,15,000 per month.

Required:

- (i) Calculate the current monthly Profit volume ratio and Break-even sales (in ₹) of the company.
- (ii) Company plans to reduce selling price of product C to increase the sales volume. By implementing the plan, it is expected that the profit volume ratio of the product C will be reduced to 50%. Determine the sales price per unit and sales units of product C required to maintain the existing amount of the contribution of the company. Also compute the effect on the company's profit volume ratio and BEP (in ₹).
- (iii) It has been proposed to undertake an intensive advertisement campaign involving an expenditure of ₹ 60,000 per month and to reduce selling price of product C to ₹ 24. Calculate the additional sales units required per month of product C to justify the expenditure on advertisement while maintaining existing contribution.



**BUDGETS
AND
BUDGETARY
CONTROL**

Q.4 Pentax Limited has prepared its expense budget for 20,000 units in its factory for the year 2013 as detailed below:

NB		(₹ per unit)
PN	Direct Materials	50
	Direct Labour	20
	Variable Overhead	15
	Direct Expenses	6
	Selling Expenses (20% fixed)	15
	Factory Expenses (100% fixed)	7
	Administration expenses (100% fixed)	4
	Distribution expenses (85% variable)	12
	Total	129

Prepare an expense budget for the production of 15,000 units and 18,000 units.

Q.7 ABC Ltd. is currently operating at 75% of its capacity. In the past two years, the levels of operations were 55% and 65% respectively. Presently, the production is 75,000 units. The company is planning for 85% capacity level during 20X3-20X4. The cost details are as follows:

NB		55% (₹)	65% (₹)	75% (₹)
PN	Direct Materials	11,00,000	13,00,000	15,00,000
	Direct Labour	5,50,000	6,50,000	7,50,000
	Factory Overheads	3,10,000	3,30,000	3,50,000
	Selling Overheads	3,20,000	3,60,000	4,00,000
	Administrative Overheads	1,60,000	1,60,000	1,60,000
		24,40,000	28,00,000	31,60,000

Profit is estimated @ 20% on sale

The following increases in costs are expected during the year

Profit is estimated @ 20% on sale

The following increases in costs are expected during the year

Direct material	8%
Direct labour	5%
Variable factory overheads	5%
Variable selling overheads	8%
Fixed factory overheads	10%
Fixed selling overheads	15%

Prepare flexible budget for the period 20X3-20X4 at 85% level of capacity. Also ascertain profit and contribution.

Q.9 The information of Z Ltd. for the year ended 31st March 2020 is as below:



	Amount (₹)
Direct materials	17,50,000
Direct wages	12,50,000
Variable factory overhead	9,50,000
Fixed factory overhead	12,00,000
Other variable costs	6,00,000
Other fixed costs	4,00,000
Profit	8,50,000
Sales	70,00,000

During the year, the company manufactured two products, X and Y, and the output and cost were:

	X	Y
Output (units)	8,000	4,000
Selling price per unit (₹)	600	550
Direct material per unit (₹)	140	157.50
Direct wages per unit (₹)	90	132.50

Variable factory overheads are absorbed as a percentage of direct wages and other variable costs are computed as:

Product X – ₹40 per unit and Product Y- ₹70 per unit.

For the FY 2020-21, due to a pandemic, it is expected that demand for product X and Y will fall by 20% & 10% respectively. It is also expected that direct wages cost will raise by 20% and other fixed costs by 10%. Products will be required to be sold at a discount of 20%.

You are required to:

- PREPARE product- wise profitability statement on marginal costing method for the FY 2019-20 and
- PREPARE a budget for the FY 2020-21.

Q.10 Action Plan Manufacturers normally produce 8,000 units of their product in a month, in their Machine Shop. For the month of January, they had planned for a production of 10,000 units. Owing to a sudden cancellation of a contract in the middle of January, they could only produce 6,000 units in January.



Indirect manufacturing costs are carefully planned and monitored in the Machine Shop and the Foreman of the shop is paid a 10% of the savings as bonus when in any month the indirect manufacturing cost incurred is less than the budgeted provision.

The Foreman has put in a claim that he should be paid a bonus of ₹ 88.50 for the month of January. The Works Manager wonders how anyone can claim a bonus when the Company has lost a sizeable contract. The relevant figures are as under:

Indirect manufacturing	Expenses for a month (₹)	Planned for January (₹)	Actual in January (₹)
Salary of foreman	1,000	1,000	1,000
Indirect labour	720	900	600
Indirect material	800	1,000	700
Repairs and maintenance	600	650	600
Power	800	875	740
Tools consumed	320	400	300
Rates and taxes	150	150	150
Depreciation	800	800	800
Insurance	100	100	100
	5,290	5,875	4,990

Do you agree with the Works Manager? Is the Foreman entitled to any bonus for the performance in January? Substantiate your answer with facts and figures.

Q.14 A single product company estimated its sales for the next year quarter-wise as under:



Quarter	
I	Sales (Units)
	30,000
II	37,500
III	41,250
IV	45,000

The opening stock of finished goods is 10,000 units and the company expect to maintain the closing stock of finished goods at 16,250 units at the end of the year. The production pattern in each quarter is based on 80% of the sales of the current quarter and 20% of the sales of the next quarter.

The opening stock of raw materials in the beginning of the year is 10,000 kg. and the closing stock at the end of the year is required to be maintained at 5,000 kg. Each unit of finished output requires 2 kg. of raw materials.

The company proposes to purchase the entire annual requirement of raw materials in the first three quarters in the proportion and at the prices given below:

Quarter	Purchase of raw material % to total annual requirement in quantity	Price per kg.
I	30%	2
II	50%	3
III	20%	4

The value of the opening stock of raw materials in the beginning of the year is ₹ 20,000.

You are required to present the following for the next year, quarter wise:

- Production budget (in units).
- Raw material consumption budget (in quantity).
- Raw material purchase budget (in quantity and value).
- Priced stores ledger card of the raw material using First in First out method

Q.16 XYZ Limited is drawing a production plan for its two products – Product 'xml' and 'Product 'yml' for the year 2015 – 16. The company's policy is to maintain closing stock of finished goods at 25% of the anticipated volume of sales of the succeeding month. The following are the estimated data for the two products:



	xml	yml
Budgeted Production (in units)	2,00,000	1,50,000
Direct Material (per unit)	₹ 220	₹ 280
Direct Labour (per unit)	₹ 130	₹ 120
Direct Manufacturing Expenses	₹ 4,00,000	₹ 5,00,000

The estimated units to be sold in the first four months of the year 2015 – 16 are as under:

	April	May	June	July
xml	8,000	10,000	12,000	16,000
yml	6,000	8,000	9,000	14,000

Prepare:

- Production Budget (Month wise)
- Production cost Budget (for first quarter of the year)

Q.19 PSV Ltd. manufactures and sells a single product and estimated the following related information for the period November, 2020 to March, 2021.



NB
PN

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Opening Stock of Finished Goods (in Units)	7,500	3,000	9,000	8,000	6,000
Sales (in Units)	30,000	35,000	38,000	25,000	40,000
Selling Price per unit (in ₹)	10	12	15	15	20

Additional Information:

- Closing stock of finished goods at the end of March, 2021 is 10,000 units.
- Each unit of finished output requires 2 kg of Raw Material 'A' and 3 kg of Raw Material 'B'.

You are required to prepare the following budgets for the period November, 2020 to March, 2021 on monthly basis:

- Sales Budget (in ₹)
- Production budget (in units) and
- Raw material Budget for Raw material 'A' and 'B' separately (in units)

Q.21 V Ltd. produces and markets a very popular product called 'X'. The company is interested in presenting its budget for the second quarter of 2019.



NB
PN

The following information are made available for this purpose:

- It expects to sell 50,000 bags of 'X' during the second quarter of 2019 at the selling price of Rs. 900 per bag.
- Each bag of 'X' requires 2.5 kgs. of a raw – material called 'Y' and 7.5 kgs. of raw – material called 'Z'.
- Stock levels are planned as follows:

Particulars	Beginning of Quarter	End of Quarter
Finished Bags of 'X' (Nos.)	15,000	11,000
Raw – Material 'Y' (Kgs.)	32,000	26,000
Raw – Material 'Z' (Kgs.)	57,000	47,000
Empty Bag (Nos.)	37,000	28,000

- 'Y' cost Rs.120 per Kg., 'Z' costs Rs.20 per Kg. and 'Empty Bag' costs Rs.80 each.
- It requires 9 minutes of direct labour to produce and fill one bag of 'X'. Labour cost is Rs.50 per hour.
- Variable manufacturing costs are Rs.45 per bag. Fixed manufacturing costs Rs.30,00,000 per quarter.
- Variable selling and administration expenses are 5% of sales and fixed administration and selling expenses are Rs.20,50,000 per quarter.

Required

- PREPARE a production budget for the said quarter.
- PREPARE a raw – material purchase budget for 'Y', 'Z' and 'Empty Bags' for the said quarter in quantity as well as in rupees.
- COMPUTE the budgeted variable cost to produce one bag of 'X'.
- PREPARE a statement of budgeted net income for the said quarter and show both per unit and total cost data.

Q.22 G Ltd. manufactures two products called 'M' and 'N'. Both products use a common raw material Z. The raw material Z is purchased @ ₹ 36 per kg from the market. The company has decided to review inventory management policies for the forthcoming year.



NB

PN

The following forecast information has been extracted from departmental estimates for the year ended 31st March 2016 (the budget period):

	Product M	Product N
Sales (units)	28,000	13,000
Finished goods stock increase by year-end	320	160
Post-production rejection rate (%)	4	6
Material Z usage (per completed unit, net of wastage)	5 kg	6 kg
Material Z wastage (%)	10	5

Additional information:

Usage of raw material Z is expected to be at a constant rate over the period.

Annual cost of holding one unit of raw material in stock is 11% of the material cost.

The cost of placing an order is ₹ 320 per order.

The management of G Ltd. has decided that there should not be more than 40 orders in a year for the raw material Z.

Required:

- Prepare functional budgets for the year ended 31st March 2016 under the following headings:
 - Production budget for Products M and N (in units).
 - Purchases budget for Material Z (in kgs and value).
- Calculate the Economic Order Quantity for Material Z (in kgs).
- If there is a sole supplier for the raw material Z in the market and the supplier do not sale more than 4,000 kg. of material Z at a time. Keeping the management purchase policy and production quantity mix into consideration, calculate the maximum number of units of Product M and N that could be produced.

Q.23  Concorde Ltd. manufactures two products using two types of materials and one grade of labour, shown below is an extract from the company's working papers of the next month's budget:

NB PN		Product-A	Product-B
	Budgeted sales (in units)	2,400	3,600
	Budgeted material consumption per unit (in kg):		
	Material-x	5	3
	Material-y	4	6
	Standard labour hours allowed per unit of product	3	5

Material-X and Material-Y cost ₹ 4 and ₹6 per kg and labour are paid ₹ 25 per hour. Overtime premium is 50% and is payable, if a worker works for more than 40 hours a week. There are 180 direct workers.

The target productivity ratio (or efficiency ratio) for the productive hours worked by the direct workers in actually manufacturing the products is 80%. In addition the non-productive down-time is budgeted at 20% of the productive hours worked.

There are four 5-days weeks in the budgeted period and it is anticipated that sales and production will occur evenly throughout the whole period.

It is anticipated that stock at the beginning of the period will be:

Product-A	4000 units
Product-B	200 units
Material-X	1,000 kgs.
Material-Y	500 kgs.

The anticipated closing stocks for budget period are as below:

Product-A	4 days sales
Product -B	5 days sales
Material-X	10 days consumption
Material-B	6 days consumption

Required:

Calculate the Material Purchas Budget and the Wages Budget for the direct workers, showing the quantities and values, for the next month.

Q.24

NB

PN

Dee Cee Limited manufactures and sells two products 'Super' and 'Deluxe'.

Dee Cee Limited's budget department gathered the following data to prepare the budgets for 2021-22

	Super	Deluxe
Expected sales (in units)	48,000	72,000
Selling price p.u.	₹ 750	₹ 950
Expected inventory as at 01-04-2021 (units)	3,900	7,600
Target inventory as at 31-03-2022 (units)	10% of production	8% of production

Company uses materials A and B in the manufacture of products "Super and Deluxe".
Projected data for 2021-22 with respect to direct materials are as follows

Material	Cost per kg (₹)	Normal Wastage	Material required per unit of output		Expected inventory as at 01.04.2021
			Super	DeLuxe	
A	60	4%	2 kg	4 kg	32,500 kg
B	80	4%	3 kg	2.4 kg	28,800 kg

Cost of opening stock of materials A and B is ₹ 57 per kg and ₹ 75 per kg respectively.
Target inventory as on 31-03-2022 for material A and B will be 10% more than the opening inventory. Company accounts for direct materials using FIFO method.

You are required to prepare the following budgets for the year 2021-22:

- Production budget (in units).
- Direct material usage budget (in quantities and rupees both).
- Direct material purchase budget (in units).

Q.29

NB

PN

Aman International School has a total of 180 students consisting of 6 sections with 30 students per section. The school plans for a picnic around the city during the week-end to places such as Prayag zoo, the Capi Park, Azad planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teachers accompanying the students). The school will employ two teachers for each bus, paying them an allowance of ₹ 500 per teacher. It will also lease out the required number of buses. The following are the other cost estimates:

	Cost per student (₹)
Breakfast	50
Lunch	100
Tea	10
Entrance fee at zoo	20

Rent ₹ 6500 per bus.

Special permit fee ₹ 500 per bus.

Block entrance fee at the planetarium ₹ 2500.

Prizes to students for games ₹ 500.

No cost are incurred in respect of the accompanying teachers (except the allowance of ₹ 500 per teacher).

You are required to PREPARE:

- A flexible budget estimating the total cost for the levels of 60, 90, 120, 150 and 180 students. Each item of cost is to be indicated separately.
- COMPARE the average cost per student at these levels.
- WHAT will be your conclusions regarding the break-even level of student if the school proposes to collect ₹ 400 per student?

Q.25  A company is engaged in the manufacture of specialized sub-assemblies required for certain electronic equipment. The company envisages that in the forthcoming month, December, 2012, the sales will take a pattern in the ratio of 3:4:2 respectively of sub-assemblies, ACB, MCB and DP.

The following is the schedule of components required for manufacture:

NB PN	Sub assembly	Selling price	Base board	Component Requirement		
				IC08	IC12	IC26
	ACB	520	1	8	4	2
	MCB	500	1	2	10	6
	DP	350	1	2	4	8
	Purchase Price	-	60	20	12	

The direct labour time and variable overheads required for each of the sub-assemblies are:

Labour hours per sub-assembly			
	Grade A	Grade B	Variable overheads per sub-assembly (₹)
ACB	8	16	36
MCB	6	12	24
DP	4	8	24
Direct wage rate per hour (₹)	5	4	-

The labourers work 8 hours a day for 25 days a month. The opening stocks of sub-assemblies and Components for December, 2012 areas under:

Sub-assemblies		Components	
ACB	800	Base Board	1,600
MCB	1,200	IC08	1,200
DP	2,800	IC12	6,000
		IC26	4,000

Fixed overheads amount to ₹ 7,57,200 for the month and a monthly profit target of ₹ 12 lacs have been set.

The company is eager for a reduction of closing inventories for December, 2012 of sub-assemblies and components by 10% of quantity as compared to the opening stock.

Prepare the following budgets for December 2012:

- Sales budget in quantity and value.
- Production budget in quantity
- Component usage budget in quantity.
- Component purchase budget in quantity and value.
- Manpower budget showing the number of workers and the amount of wages payable.

Q.30

NB

PN

PS Limited is a manufacturing company and is operating at 75% capacity utilization. The PV ratio at this level of activity is 40%.

The flexible budget drafted by the company for two levels of activity is given below:

	Capacity utilization (75 %)	Capacity utilization (100 %)
	Amount in ₹ (Lakhs)	Amount in ₹ (Lakhs)
Direct materials	180	240
Direct wages	120	160
Power and fuel	12	16
Repairs and maintenance	18	21
Consumables	21	28
Supervision	20	20
Indirect labour	36	42
Administrative expenses	21	21
Selling expenses	18	18
Depreciation	54	54

You are required to:

- CALCULATE the profit earned by PS Limited at 75% level of activity.
- CALCULATE the break-even level of activity.

Q.32

NB

PN

PQR Limited manufactures three products - Product X, Product Y and Product Z. The output for the current year is 2,50,000 units of Product X, 2,80,000 units of Product Y and 3,20,000 units of Product Z respectively.

Selling price of Product X is 1.25 times of Product Z whereas Product Y can be sold at double the price at which product Z can be sold. Product Z can be sold at a profit of 20% on its marginal cost.

Other information are as follows:

	Product X	Product Y	Product Z
Direct Material Cost (Per unit)	₹ 20	₹ 20	₹ 20
Direct Wages Cost (per unit)	₹ 16	₹ 24	₹ 16

Raw material used for manufacturing all the three products is the same. Direct Wages are paid @ ₹ 4 per labour hour, Total overhead cost of the company is ₹ 52,80,000 for the year, out of which ₹ 1 per labour hour is variable and the rest is fixed.

In the next year it is expected that sales of product X and product Z will increase by 12% and 15% respectively and sale of product Y will decline by 5%. The total overhead cost of the company for the next year is estimated at ₹ 55,08,000. The variable cost of ₹ 1 per labour hour remains unchanged.

It is anticipated that all other costs will remain same for the next year and there is opening and closing stock. Selling Price per unit of each product will remain unchanged in the next year.

Required:

Prepare a budget showing the current position and the position for the next year clearly indicating the total product-wise contribution and profit for the company as a whole.

Q.33

NB

PN

SR Ltd. is a manufacturer of Garments. For the first three months of financial year 2022-23 commencing on 1st April 2022, production will be constrained by direct labour. It is estimated that only 12,000 hours of direct labour hours will be available in each month.

For market reasons, production of either of the two garments must be at least 25% of the production of the other. Estimated cost and revenue per garment are as follows:

	Shirt (₹)	Short (₹)
Sales price	60	44
Raw Materials		
Fabric @12 per metre	24	12
Dyes and cotton	6	4
Direct labour @ 8 per hour	8	4
Fixed Overhead @ 4 per hour	4	2
Profit	18	22

From the month of July 2022 direct labour will no longer be a constraint. The company expects to be able to sell 15,000 shirts and 20,000 shorts in July, 2022. There will be no opening stock at the beginning of July 2022.

Sales volumes are expected to grow at 10% per month cumulatively thereafter throughout the year. Following additional information is available:

- The company intends to carry stock of finished garments sufficient to meet 40% of the next month's sale from July 2022 onwards.
- The estimated selling price will be same as above.

Required:

- Calculate the number of shirts and shorts to be produced per month in the first quarter of financial year 2022-2023 to maximize company's profit.
- Prepare the following budgets on a monthly basis for July, August and September 2022:
 - Sales budget showing sales units and sales revenue for each product.
 - Production budget (in units) for each product.

Q.34



NB

PN

Maharatna Ltd., a public sector undertaking (PSU), produces product A. The company is in process of preparing its revenue budget for the year 2022. The company has the following information which can be useful in preparing the budget:

- (i) It has anticipated 12% growth in sales volume from the year 2021 of 4,20,000 tonnes.
- (ii) The sales price of ₹23,000 per tonne will be increased by 10% provided Wholesale Price Index (WPI) increases by 5%.
- (iii) To produce one tonne of product A, 2.3 tonnes of raw material are required. The raw material cost is ₹4,500 per tonne. The price of raw material will also increase by 10% if WPI increase by 5%.
- (iv) The projected increase in WPI for 2022 is 4%
- (v) A total of 6,000 employees works for the company. The company works 26 days in a month.
- (vi) 85% of employees of the company are permanent and getting salary as per 5- year wage agreement. The earnings per manshift (means an employee cost for a shift of 8 hours) is ₹ 3,000 (excluding terminal benefits). The new wage agreement will be implemented from 1st July 2022 and it is expected that a 15% increase in pay will be given.
- (vii) The casual employees are getting a daily wage of ₹ 850. The wages are linked to Consumer Price Index (CPI). The present CPI is 165.17 points and it is expected to be 173.59 points in year 2022.
- (viii) Power cost for the year 2021 is ₹ 42,00,000 for 7,00,000 units (1 unit = 1 Kwh). 60% of power is used for production purpose (directly related to production volume) and remaining are for employee quarters and administrative offices.
- (ix) During the year 2021, the company has paid ₹ 60,00,000 for safety and maintenance works. The amount will increase in proportion to the volume of production.
- (x) During the year 2021, the company has paid ₹ 1,20,000 for the purchase of diesel to be used in car hired for administrative purposes. The cost of diesel will increase by 15% in year 2022.
- (xi) During the year 2021, the company has paid ₹ 6,00,000 for car hire charges (excluding fuel cost). In year 2022, the company has decided to reimburse the diesel cost to the car rental company. Doing this will attract 5% GST on Reverse Charge Mechanism (RCM) basis on which the company will not get GST input credit.
- (xii) Depreciation on fixed assets for the year 2021 is ₹ 80,40,00,000 and it will be 15% lower in 2022.

Required:

From the above information PREPARE Revenue (Flexible) budget for the year 2022 and also show the budgeted profit/ loss for the year.

Q.35

Raja Ltd manufactures and sells a single product and has estimated sales revenue of ₹ 302.4 lakh during the year based on 20% profit on selling price. Each unit of product requires 6 kg of material A and 3 kg of material B and processing time of 4 hours in machine shop and 2 hours in assembly shop. Factory overheads are absorbed at a blanket rate of 20% of direct labour. Variable selling & distribution overheads are ₹ 60 per unit sold and fixed selling & distribution overheads are estimated to be ₹ 69,12,000.

The other relevant details are as under:

Purchase Price: Material A ₹ 160 per kg
 Materials B ₹ 100 per kg

Labour Rate: Machine Shop ₹ 140 per hour
 Assembly Shop ₹ 70 per hour

	Finished Stock	Material A	Material B
Opening Stock	2,500 units	7,500 kg	4,000 kg
Closing Stock	3,000 units	8,000 kg	5,500 kg

Required

- CALCULATE number of units of product proposed to be sold and selling price per unit,
- PREPARE Production Budget in units and
- PREPARE Material Purchase Budget in units.

Q.37

A factory is currently working at 60% capacity and produces 12,000 units of a product. Management is thinking to increase the working capacity either to 70% or 90% level. It is estimated that at both the levels, it will be able to sell all the produced units. The other details are as under:

- At 70% capacity, the cost of raw materials increases by 4% and the selling price falls by 3%.
- At 90% capacity, the cost of raw materials increases by 5% and selling price falls by 4%.
- At 60% capacity, the product cost is ₹ 360 per unit and it is sold at ₹ 400 per unit.
- The unit cost of 360 consists of the following:

Material	₹ 200
Labour	₹ 60
Factory overhead	₹ 60 (50 % fixed)
Administrative & Selling overhead	₹ 40 (60 % fixed)

- Additional advertising cost of ₹ 20,000 is to be incurred for selling the product above 80% capacity.

You are required to:

- Calculate the profits of the company when the factory works at 60%, 70% and 90% capacity level.
- Offer your comments regarding increase in the capacity based on profit calculated.