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CA Inter

Cost Management

Version 4

Jan 26
& Onwards

Ready To Go
Question Bank

CA
Amit Sharma

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1 CHAPTER Cost Sheet

Q.1 Calculation of Cost Sheet | PY May 18

Following information relate to a manufacturing concern for the year ended 31 st March, 2018:

	₹
Raw Material (opening)	2,28,000
Raw Material (closing)	3,05,000
Purchases of Raw Material	42,25,000
Freight Inwards	1,00,000
Direct wages paid	12,56,000
Direct wages-outstanding at the end of the year	1,50,000
Factory Overheads	20% of prime cost
Work-in-progress (opening)	1,92,500
Work-in-progres (closing)	1,40,700
Administrative Overheads (related to production)	1,73,000
Distribution Expenses	₹ 16 per unit
Finished Stock (opening)-1217 Units	6,08,500
Sale of scrap of material	8,000

The firm produced 14000 units of output during the year. The stock of finished goods at the end of the year is valued at cost of production. The firm sold 14153 units at a price of ₹ 618 per unit during the year.
Prepare cost sheet of the firm.

Ans.

Cost sheet for the year ended 31st March, 2018.
Units produced - 14,000 units
Units sold - 14,153 units

Particulars	Amount (₹)
Raw materials purchased	42,25,000
Add: Freight Inward	1,00,000
Add: Opening value of raw materials	2,28,000
Less: Closing value of raw materials	(3,05,000)
	42,48,000
Less: Sale of scrap of material	8,000
Materials consumed	42,40,000
Direct Wages (12,56,000 + 1,50,000)	14,06,000
Prime Cost	56,46,000
Factory overheads (20% of ₹ Prime Cost)	11,29,200
Add: Opening value of W-I-P	1,92,500
Less: Closing value of W-I-P	(1,40,700)
Factory Cost	68,27,000
Add: Administrative overheads	1,73,000
Cost of Production	70,00,000
Add: Value of opening finished stock	6,08,500
Less: Value of closing finished stock	
[₹ 500(70,00,000/14,000) × 1,064) (1,217+ 14,000 – 14,153 = 1,064 units)	(5,32,000)
Cost of Goods Sold	70,76,500
Distribution expenses (₹ 16 × 14,153 units)	2,26,448
Cost of Sales	73,02,948

Profit (Balancing figure)	14,43,606
Sales (₹ 618 × 14,153 units)	87,46,554

Q.2 Calculation of Cost Sheet | PY Nov 18

Following details are provided by M/s ZIA Private Limited for the quarter ending 30 September, 2018:

(i)	Direct expenses	₹ 1,80,000
(ii)	Direct wages being 175% of factory overheads	₹ 2,57,250
(iii)	Cost of goods sold	₹ 18,75,000
(iv)	Selling & distribution overheads	₹ 60,000
(v)	Sales	₹ 22,10,000
(vi)	Administration overheads are 10% of factory overheads	

Stock details as per Stock Register:

Particulars	30.06.2018 ₹	30.09.2018 ₹
Raw material	2,45,600	2,08,000
Work-in-progress	1,70,800	1,90,000
Finished goods	3,10,000	2,75,000

You are required to prepare a cost sheet showing:
(i) Raw material consumed
(ii) Prime cost
(iii) Factory cost
(iv) Cost of goods sold
(v) Cost of sales and profit

Ans.

Cost Sheet
(for the quarter ending 30 September 2018)

	Amount (₹)
(i) Raw materials consumed	
Opening stock of raw materials	2,45,600
Add: Purchase of materials	12,22,650*
Less: Closing stock of raw materials	(2,08,000)
Raw materials consumed	12,60,250
Add: Direct wages (1,47,000×175%)	2,57,250
Direct Expenses	1,80,000
(ii) Prime cost	**16,97,500**
Add: Factory overheads (2,57,250/175%)	1,47,000
Gross Factory cost	18,44,500
Add: Opening work-in-process	1,70,800
Less: Closing work-in-process	(1,90,000)
(iii) Factory cost	**18,25,300**
Add: Administration overheads (10% of factory overheads)	14,700
Add: Opening stock of finished goods	3,10,000
Less: Closing stock of finished goods	(2,75,000)
(iv) Cost of goods sold	**18,75,000**
Add: Selling & distribution overheads	60,000
Cost of sales	19,35,000

(v) Net Profit	**2,75,000**
Sales	22,10,000

*(18,75,000 + 2,75,000 – 3,10,000 – (1,47,000 × 10%) + 1,90,000 –1,70,800 – (2,57,250 × 100/175%) - 1,80,000 – 2,57,250 + 2,08,000 – 2,45,600) = 12,22,650

Working notes

Purchase of raw materials = Raw material consumed + Closing stock - opening stock of raw material
Raw material consumed = Prime cost - Direct wages - Direct expenses
Factory Overheads = 2,57,250*100/175
Prime cost = Factory cost + Closing WIP – Opening WIP – Factory overheads
Factory Cost = Cost of Production goods sold + Closing stock of Finished goods – Opening stock of finished goods – Administrative overheads
Net Profit = Sales - Cost of sales

Alternative solution

Cost Sheet
(for the quarter ending 30 September 2018)

	Amount (₹)
(i) Raw materials consumed	
Opening stock of raw materials	2,45,600
Add: Purchase of materials	12,37,350*
Less: Closing stock of raw materials	(2,08,000)
Raw Material consumed	12,74,950
Add: Direct wages (1,47,000×175%	2,57,250
Direct Expenses	1,80,000
(ii) Prime cost	**17,12,,200**
Add: Factory overheads (2,57,250/175%)	1,47,000
Gross Factory cost	18,59,200
Add: Opening work-in-process	1,70,800
Less: Closing work-in-process	(1,90,000)
(iii) Factory cost/works cost/cost of production	**18,40,000**
Add: Opening stock of finished goods	3,10,000
Less: Closing stock of finished goods	(2,75,000)
(iv) Cost of goods sold	**18,75,000**
Add: Administration overheads (10% of factory overheads)	14,700
Add: Selling & distribution overheads	60,000
Cost of sales	19,49,700
(v) Net Profit	**2,60,300**
Sales	22,10,000

*(18,75,000 + 2,75,000 – 3,10,000 + 1,90,000 –1,70,800 – 1,47,500 - 1,80,000 – 2,57,250 + 2,08,000 – 2,45,600) = 12,37,350

Working notes

Purchase of raw materials = Raw material consumed + Closing stock - opening stock of raw material
Raw material consumed = Prime cost - Direct wages - Direct expenses Factory Overheads = 257250*100/175
Prime cost = Factory cost + Closing WIP – Opening WIP – Factory overheads
Factory Cost = Cost of Production goods sold + Closing stock of Finished goods – Opening stock of finished goods
Net Profit = Sales - Cost of sales

Q.3 Calculation of Cost Sheet | PY May 19

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 ₹ 40 per unit
(ii) Direct Labour ₹ 30 per unit (subject to a minimum of ₹ 48,000 p.m.)
(iii) Factory Overheads:
  (a) Fixed ₹ 3,60,000 per annum
  (b) Variable ₹ 10 per unit
  (c) Semi-variable ₹ 1,08,000 per annum up to 50% capacity and additional ₹ 46,800 for every 20% increase in capacity or any part thereof.
(iv) Administrative Overheads ₹ 5, 18,400 per annum (fixed)
(v) Selling overheads are incurred at ₹ 8 per unit.
(vi) Each unit of raw material yields scrap which is sold at the rate of ₹ 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 ₹ 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 ₹ 8,76,600.

Ans. **(i) Cost Sheet of M/s Areeba Pvt. Ltd. for the year 2019.**
Normal Capacity: 36,000 units p.a.

Particulars	3 Months 4,500 Units		9 Months 21,600 units	
	Amount (₹)	Cost per unit (₹)	Amount (₹)	Cost per unit (₹)
Direct material	1,80,000		8,64,000	
Less: Scrap	(22,500)		(1,08,000)	
Materials consumed	1,57,500	35	7,56,000	35
Direct Wages	1,44,000	32	6,48,000	30
Prime Cost	**3,01,500**	67	**14,04,000**	65
Factory overheads:				
- Fixed	90,000		2,70,000	
- Variable	45,000		2,16,000	
- Semi variable	27,000	36	1,51,200	29.50
Works Cost	**4,63,500**	103	**20,41,200**	94.50
Add: Administrative overheads	1,29,600	28.80	3,88,800	18
Cost of Production	**5,93,100**	131.80	**24,30,000**	112.5
Selling Overheads	36,000	8	1,72,800	8
Cost of Sales	**6,29,100**	139.80	**26,02,800**	120.5

Working Notes:
Calculation of Costs

Particulars	4,500 units Amount (₹)	21,600 units Amount (₹)
Material	1,80,000 (₹ 40 × 4,500 units)	8,64,000 (₹40 × 21,600 units)
Wages	1,44,000 (Max. of ₹ 30 × 4,500 units = ₹1,35,000 and ₹ 48,000 × 3 months = ₹1,44,000)	6,48,000 (21600 Units × 30)
Variable Cost	45,000 (₹10 × 4,500 units)	2,16,000 (₹10 × 21,600 units)

Semi-variable Cost	27,000 $\left(\frac{1,08,000}{12 \text{ Months}} \times 3 \text{ Months}\right)$	1,51,200 $\left(\frac{1,08,000}{12 \text{ Months}} \times 9 \text{ Months}\right)$
		+46,800(for 20 % increase) +23,400(for 10% increase)
Selling Overhead	36,000 (₹8 × 4,500 units)	1,72,800(₹ 8 × 21,600 units)

Notes:

1. Alternatively scrap of raw material can also be reduced from Work cost.
2. Administrative overhead may be treated alternatively as a part of general overhead. In that case, Works Cost as well as Cost of Production will be same i.e. ₹ 4,63,500 and Cost of Sales will remain same as ₹ 6,29,100.

(ii) Calculation of Selling price for nine months period

Particulars	Amount (₹)
Total Cost of sales ₹ (6,29,100+26,02,800)	32,31,900
Add: Desired profit	8,76,600
Total sales value	41,08,500
Less: Sales value realised in first three months (₹145 × 4,500 units)	(6,52,500)
Sales Value to be realised in next nine months	**34,56,000**
No. of units to be sold in next nine months	21,600
Selling price per unit (₹34,56,000 ÷ 21,600 units)	**160**

Q.4 Calculation of Cost Sheet | PY Nov 19

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

	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 :
(i) Calculate the Value of material purchased
(ii) Prepare cost sheet showing the profit earned by the firm.

Ans. **Workings:**

1. **Calculation of Sales Quantity:**

Particular	Units
Production units	1,00,000
Less: Defectives (4%×1,00,000 units)	4,000
Less: Closing stock of finished goods	5,000
No. of units sold	91,000

2. **Calculation of Cost of Production**

Particular	Amount (₹)
Cost of Goods sold (given)	78,26,000
Add: Value of Closing finished goods $\left(\frac{78,26,000}{91,000 \text{ units}} x\ 5,000 \text{ units}\right)$	4,30,000
Cost of Production	82,56,000

3. **Calculation of Factory Cost**

Particular	Amount (₹)
Cost of Production	82,56,000
Less: Quality Control Cost	(2,00,000)
Less: Research and Development Cost	(2,50,000)
Add: Credit for Recoveries/Scrap/By-Products/misc. income (1,00,000 units × 4% × ₹ 61)	2,44,000
Factory Cost	80,50,000

4. **Calculation of Gross Factory Cost**

Particular	Amount (₹)
Cost of Factory Cost	80,50,000
Less: Opening Work in Process	(2,00,000)
Add: Closing Work in Process	5,00,000
Cost of Gross Factory Cost	83,50,000

5. **Calculation of Prime Cost**

Particular	Amount (₹)
Cost of Gross Factory Cost	83,50,000
Less: Consumable stores & spares	(3,50,000)
Less: Lease rental of production assets	(2,00,000)
Prime Cost	78,00,000

6. **Calculation of Cost of Materials Consumed & Labour cost**

Let Cost of Material Consumed = M and Labour cost = 0.5M
Prime Cost = Cost of Material Consumed + Labour Cost 78,00,000 = M + 0.5M
M = 52,00,000
Therefore, Cost of Material Consumed = ₹ 52,00,000 and Labour Cost = ₹ 26,00,000

(i) Calculation of Value of Materials Purchased

Particular	Amount (₹)
Cost of Material Consumed	52,00,000
Add: Value of Closing stock	2,92,000
Less: Value of Opening stock	(2,42,000)
Value of Materials Purchased	**52,50,000**

Cost Sheet

Sl.	Particulars	Total Cost (₹)
1.	Direct materials consumed:	
	Opening Stock of Raw Material	2,42,000
	Add: Additions/ Purchases [balancing figure as perrequirement (i)]	**52,50,000**
	Less: Closing stock of Raw MaterialCH	(2,92,000)
	Material Consumed	**52,00,000**
2.	Direct employee (labour) cost	**26,00,000**
3.	**Prime Cost (1+2)**	**78,00,000**
4.	Add: Works/ Factory Overheads Consumable stores and spares	
	Lease rent of production asset	**3,50,000**
		2,00,000
5.	Gross Works Cost (3+4)	**83,50,000**
6.	Add: Opening Work in Process	**2,00,000**
7.	Less: Closing Work in Process	**(5,00,000)**
8.	**Works/ Factory Cost (5+6-7)**	**80,50,000**
9.	Add: Quality Control Cost	**2,00,000**
10.	Add: Research and Development Cost	**2,50,000**
11.	Less: Credit for Recoveries/Scrap/By-Products/misc. income	**(2,44,000)**
12.	**Cost of Production (8+9+10-11)**	**82,56,000**
13.	Add: Opening stock of finished goods	**-**
14.	Less: Closing stock of finished goods (5000 Units)	**(4,30,000)**
15.	**Cost of Goods Sold (12+13-14)**	**78,26,000**
16.	Add: Administrative Overheads (General)	**2,24,000**
17.	Add: Secondary packing	**1,82,000**
18.	Add: Selling Overheads& Distribution Overheads	**4,13,000**
19.	**Cost of Sales (15+16+17+18)**	**86,45,000**
20.	Profit	**13,65,000**
21.	Sales 91,000 units ₹ 110 per unit	**1,00,10,000**

Q.5 Calculation of Cost Sheet | PY Nov 20

X Ltd. manufactures two types of pens 'Super Pen' and 'Normal Pen'.

The cost data for the year ended 30th September, 2019 is as follows:

	(₹)
Direct Materials	8,00,000
Direct Wages	4,48,000
Production Overhead	1,92,000
Total	14,40,000

It is further ascertained that :

(1) Direct materials cost in Super Pen was twice as much of direct material in Normal Pen.

(2) Direct wages for Normal Pen were 60% of those for Super Pen.

(3) Production overhead per unit was at same rate for both the types.

(4) Administration overhead was 200% of direct labour for each.

(5) Selling cost was ₹ 1 per Super pen.

(6) Production and sales during the year were as follow

Production		Sales	
	No. of units		No. of units
Super Pen	40,000	Super Pen	36,000
Normal Pen	1,20,000		

(7) Selling price was ₹ 30 per unit for Super Pen.

Prepare a Cost Sheet for 'Super Pen' showing:

(i) Cost per unit and Total Cost

(ii) Profit per unit and Total Profit

Ans. **Preparation of Cost Sheet for Super Pen**

No. of units produced = 40,000 units

No. of units sold = 36,000 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (i))	8.00	**3,20,000**
Direct wages (Working note- (ii))	4.00	**1,60,000**
Prime cost	12.00	4,80,000
Production overhead (Working note- (iii))	1.20	**48,000**
Factory Cost	13.20	5,28,000
Administration Overhead* (200% of direct wages)	8.00	**3,20,000**
Cost of production	21.20	8,48,000
Less: Closing stock (40,000 units – 36,000 units)	-	**(84,800)**
Cost of goods sold i.e. 36,000 units	21.20	7,63,200
Selling cost	1.00	**36,000**
Cost of sales/ Total cost	**22.20**	**7,99,200**
Profit	**7.80**	**2,80,800**
Sales value (₹ 30 × 36,000 units)	30.00	**10,80,000**

Working Notes:

(i) Direct material cost per unit of Normal pen = M

Direct material cost per unit of Super pen = 2M

Total Direct Material cost = 2M × 40,000 units + M × 1,20,000 units

Or, ₹ 8,00,000 = 80,000 M + 1,20,000 M

Or, M $= \frac{8,00,000}{2,00,000}$ = ₹ 4

Therefore, Direct material Cost per unit of Super pen = 2 × ₹ 4 = ₹ 8

(ii) Direct wages per unit for Super pen = W

Direct wages per unit for Normal Pen = 0.6W

So, (W x 40,000) + (0.6W x 1,20,000) = ₹ 4,48,000

W = ₹ 4 per unit

(iii) Production overhead per unit = $\frac{1,92,000}{(40,000 + 1,20,000)}$ = ₹ 1.20

Production overhead for Super pen = ₹ 1.20 × 40,000 units = ₹ 48,000

* Administration overhead is specific to the product as it is directly related to direct labour as mentioned in the question and hence to be considered in cost of production only.

Assumption: It is assumed that in point (1) and (2) of the Question, direct materials cost and direct wages respectively is related to per unit only.

Note: Direct Material and Direct wages can be calculated in alternative ways.

Q.6 Calculation of Cost Sheet | PY Jan 21

XYZ Ltd. is engaged in the manufacturing of toys. It can produce 4,20,000 toys at its 70% capacity on per annum basis. Company is in the process of determining sales price for the financial year 2020-21. It has provided the following information:

Direct Material ₹ 60 per unit Direct Labour ₹ 30 per unit Indirect Overheads:

Fixed ₹ 65,50,000 per annum

Variable ₹ 15 per unit

Semi-variable ₹ 5,00,000 per annum up to 60% capacity and ₹ 50,000 for every 5% increase in capacity or part thereof up to 80% capacity and thereafter ₹ 75,000 for every 10% increase in capacity or part thereof.

Company desires to earn a profit of ₹ 25,00,000 for the year. Company has planned that the factory will operate at 50% of capacity for first six months of the year and at 75% of capacity for further three months and for the balance three months, factory will operate at full capacity.

You are required to :

(1) Determine the average selling price at which each of the toy should be sold to earn the desired profit.

(2) Given the above scenario, advise whether company should accept an offer to sell each Toy at:

(a) ₹ 130 per Toy

(b) ₹ 129 per Toy

Ans. **(1) Statement of Cost**

	For first 6 months	For further 3 months	For remaining 3 months	Total
	6,00,000 x 6/12 x 50% = 1,50,000 units	6,00,000 x 3/12 x 75% = 1,12,500 units	6,00,000 x 3/12 = 1,50,000 units	4,12,500 units
Direct Material	90,00,000	67,50,000	90,00,000	2,47,50,000
Direct labour	45,00,000	33,75,000	45,00,000	1,23,75,000
Indirect – Variable Expenses	22,50,000	16,87,500	22,50,000	61,87,500
Indirect – Fixed Expenses	32,75,000	16,37,500	16,37,500	65,50,000
Indirect Semi-variable expenses				
For first six months @ 5,00,000 per annum	2,50,000			
For further three months @ 6,50,000* per annum		1,62,500		
For further three months @ 8,50,000** per annum			2,12,500	6,25,000
Total Cost	1,92,75,000	1,36,12,500	1,76,00,000	5,04,87,500
Desired Profit				25,00,000
Sales value				5,29,87,500
Average Sales price per Toy				**128.45**

* ₹ 5,00,000+ [3 times (from 60% to 75%) x 50,000] = ₹ 6,50,000

** ₹ 6,50,000+ [1 time (from 75% to 80%) x 50,000] + [2 times (from 80% to 100%) x 75,000] = ₹ 8,50,000

(2) (a) Company Should accept the offer as it is above its targeted sales price of ₹ 128.45 per toy.

(b) Company Should accept the offer as it is above its targeted sales price of ₹ 128.45 per toy.

Q.7 Calculation of Cost Sheet | PY July 21

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

Particulars	Amount (in ₹)
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:

(i) Cost of Raw Material consumed.
(ii) Prime Cost
(iii) Work Cost
(iv) Cost of Production
(v) Cost of Sales.

Ans. Statement of Cost for the month of March, 2021

Particulars	Amount (₹)	Amount (₹)
(i) Cost of Material Consumed:		
Raw materials purchased (₹ 2,00,000 – ₹ 40,000)	1,60,000	
Carriage inwards	20,000	
Add: Opening stock of raw materials	80,000	
Less: Closing stock of raw materials	(30,000)	**2,30,000**
Direct Wages		1,20,000
Direct expenses:		
Cost of special drawing	30,000	
Hire charges paid for Plant	24,000	54,000
(ii) Prime Cost		**4,04,000**
Carriage on return	6,000	
Store overheads (10% of material consumed)	23,000	
Factory overheads (20% of Prime cost)	80,800	
Additional expenditure for rectification of defective products (refer		

	working note)	2,160	1,11,960
	Gross factory cost		5,15,960
	Add: Opening value of W-I-P		50,000
	Less: Closing value of W-I-P		(24,000)
(iii)	**Works/ Factory Cost**		**5,41,960**
	Less: Realisable value on sale of scrap		(5,000)
(iv)	**Cost of Production**		**5,36,960**
	Add: Opening stock of finished goods		-
	Less: Closing stock of finished goods		-
	Cost of Goods Sold		**5,36,960**
	Administrative overheads:		
	Maintenance of office building	2,000	
	Salary paid to Office staff	25,000	
	Legal Charges	2,500	29,500
	Selling overheads:		
	Expenses for participation in Industrial exhibition	8,000	8,000
	Distribution overheads:		
	Depreciation on delivery van	6,000	
	Warehousing charges	1,500	7,500
(v)	**Cost of Sales**		**5,81,960**

Alternative Solution

(considering Hire charges paid for Plant as indirect expenses)

Statement of Cost for the month of March, 2021

Particulars	Amount (₹)	Amount (₹)
Cost of Material Consumed:		
Raw materials purchased (₹ 2,00,000 - ₹ 40,000)	1,60,000	
Carriage inwards	20,000	
Add: Opening stock of raw materials	80,000	
Less: Closing stock of raw materials	(30,000)	**2,30,000**
Direct Wages		1,20,000
Direct expenses:		
Cost of special drawing	30,000	30,000
Prime Cost		**3,80,000**
Hire charges paid for Plant	24,000	
Carriage on return	6,000	
Store overheads (10% of material consumed)	23,000	
Factory overheads (20% of Prime cost)	76,000	
Additional expenditure for rectification of defective products (refer working note)	2,160	1,31,160
Gross factory cost		**5,11,160**
Add: Opening value of W-I-P		50,000
Less: Closing value of W-I-P		(24,000)
Works/ Factory Cost		**5,37,160**
Less: Realisable value on sale of scrap		(5,000)
Cost of Production		**5,32,160**
Add: Opening stock of finished goods		-
Less: Closing stock of finished goods		-
Cost of Goods Sold		**5,32,160**
Administrative overheads:		
Maintenance of office building	2,000	

Salary paid to Office staff	25,000	
Legal Charges	2,500	29,500
Selling overheads:		
Expenses for participation in Industrial exhibition	8,000	8,000
Distribution overheads:		
Depreciation on delivery van	6,000	
Warehousing charges	1,500	7,500
Cost of Sales		**5,77,160**

Working Notes:

1. **Number of Rectified units**

Total Output	8,000 units
Less: Rejected 10%	800 units
Finished product	7,200 units
Rectified units (10% of finished product)	**720 units**

2. **Proportionate additional expenditure on 720 units**
   = 20% of proportionate direct wages
   = 0.20 x (₹ 1,20,000/8,000) x 720
   = ₹ 2,160

Q.8 Calculation of Cost Sheet | PY Dec 21

G Ltd. manufactures leather bags for office and school purposes.

The following information is related with the production of leather bags for the month of September, 2021.

(1) Leather sheets and cotton clothes are the main inputs and the estimated requirement per bag is two metres of leather sheets and one metre of cott on cloth. 2,000 metre of leather sheets and 1,000 metre of cotton cloths are purchased at ₹ 3,20,000 and ₹ 15,000 respectively. Freight paid on purchases is ₹ 8,500.

(2) Stitching and finishing need 2,000 man hours at ₹ 80 per hour.

(3) Other direct costs of ₹ 10 per labour hour is incurred.

(4) G Ltd. have 4 machines at a total cost of ₹ 22,00,000. Machines have a life of 10 years with a scrap value of 10% of the original cost. Depreciation is charged on a straight-line method.

(5) The monthly cost of administration and sales office staffs are ₹ 45,000 and ₹ 72,000 respectively. G Ltd. pays ₹ 1,20,000 per month as rent for a 2,400 sq. feet factory premises. The administrative and sales office occupies 240 sq. feet and 200 sq. feet respectively of factory space.

(6) Freight paid on delivery of finished bags is ₹ 18,000.

(7) During the month, 35 kgs of scrap (cuttings of leather and cotton) are sold at ₹ 150 per kg.

(8) There are no opening and closing stocks of input materials. There is a finished stock of 100 bags in stock at the end of the month.

You are required to prepare a cost sheet in respect of above for the month of September 2021 showing:

(i) Cost of Raw Material Consumed
(ii) Prime Cost
(iii) Works/Factory Cost
(iv) Cost of Production
(v) Cost of Goods Sold
(vi) Cost of Sales

Ans. **No. of bags manufactured = 1,000 units**

Cost sheet for the month of September 2021

	Particulars	Total Cost (₹)	Cost per unit (₹)
1.	Direct materials consumed:		

	- Leather sheets	3,20,000	320.00
	- Cotton cloths	15,000	15.00
	Add: Freight paid on purchase	8,500	8.50
	(i) Cost of material consumed	3,43,500	343.50
2.	Direct wages (₹80 × 2,000 hours)	1,60,000	160.00
3.	Direct expenses (₹10 × 2,000 hours)	20,000	20.00
4.	**(ii) Prime Cost**	5,23,500	523.50
5.	Factory Overheads: Depreciation on machines {(₹ 22,00,000 × 90%) ÷ 120 months}	16,500	16.50
	Apportioned cost of factory rent	98,000	98.00
6.	**(iii) Works/ Factory Cost**	6,38,000	638.00
7.	*Less:* Realisable value of cuttings (₹150×35 kg.)	(5,250)	(5.25)
8.	**(iv) Cost of Production**	6,32,750	632.75
9.	*Add:* Opening stock of bags	0	
10.	*Less:* Closing stock of bags (100 bags × ₹632.75)	(63,275)	
11.	**(v) Cost of Goods Sold**	5,69,475	632.75
12.	*Add:* Administrative Overheads:		
	- Staff salary	45,000	50.00
	Apportioned rent for administrative office	12,000	13.33
13.	*Add:* Selling and Distribution Overheads		
	- Staff salary	72,000	80.00
	- Apportioned rent for sales office	10,000	11.11
	- Freight paid on delivery of bags	18,000	20.00
14.	**(vi) Cost of Sales**	7,26,475	807.19

Apportionment of Factory rent:
To factory building {(₹ 1,20,000 ÷ 2400 sq. feet) × 1,960 sq. feet} = ₹ 98,000 To administrative office {(₹ 1,20,000 ÷ 2400 sq. feet) × 240 sq. feet} = ₹ 12,000 To sale office {(₹ 1,20,000 ÷ 2400 sq. feet) × 200 sq. feet} = ₹ 10,000

Q.9 Calculation of Cost Sheet | PY May 22

The following data are available from the books and records of A Ltd. for the month of April 2022:

Particulars	Amount (₹)
Stock of raw materials on 1st April 2022	10,000
Raw materials purchased	2,80,000
Manufacturing wages	70,000
Depreciation on plant	15,000
Expenses paid for quality control check activities	4,000
Lease Rent of Production Assets	10,000
Administrative Overheads (Production)	15,000
Expenses paid for pollution control and engineering & maintenance	1,000
Stock of raw materials on 30th April 2022	40,000
Primary packing cost	8,000
Research & development cost (Process related)	5,000
Packing cost for redistribution of finished goods	1,500
Advertisement expenses	1,300

Stock of finished goods as on 1st April 2022 was 200 units having a total cost of ₹ 28,000. The entire opening stock of finished goods has been sold during the month.
Production during the month of April, 2022 was 3,000 units. Closing stock of finished goods as on 30th April, 2022 was 400 units.
You are required to:

I. Prepare a Cost Sheet for the above period showing the:
(i) Cost of Raw Material consumed
(ii) Prime Cost
(iii) Factory Cost
(iv) Cost of Production
(v) Cost of goods sold
(vi) Cost of Sales

II. Calculate selling price per unit, if sale is made at a profit of 20% on sales.

Ans. **I. Statement of Cost (for the month of April, 2022)**

S. No.	Particulars	Amount (₹)	Amount (₹)
	Opening stock of Raw material	10,000	
	Add: Purchase of Raw material	2,80,000	
	Less: Closing stock of raw materials	(40,000)	
	Raw material consumed		**2,50,000**
(i)	Manufacturing wages		70,000
(ii)	**Prime Cost**		**3,20,000**
	Factory/work overheads:		
	Depreciation on plant	15,000	
	Lease rent of production Asset	10,000	
	Expenses paid for pollution control and engineering & Maintenance	1,000	26,000
(iii)	**Factory/Work Cost**		**3,46,000**
	Expenses paid for quality control check activity		4,000
	Research and Development Cost		5,000
	Administration Overheads (Production)		15,000
	Primary Packing Cost		8,000
(iv)	**Cost of Production**		**3,78,000**
	Add: Opening stock of finished goods		28,000
	Less: Closing stock of finished goods		**(50,400)**
(v)	**Cost of Goods Sold**		**3,55,600**
	Advertisement expenses		1,300
	Packing cost for re-distribution of finished goods sold		1,500
(vi)	**Cost of Sales**		**3,58,400**

Note: Valuation of Closing stock of finished goods
$= \frac{3,78,000}{3000 \text{ units}} \times 400 \text{ units}$
= ₹50,400

II. Cost per unit sold $= \frac{3,58,400}{200 + 3,000 - 400}$ = ₹ 128 per unit

Selling Price $= \frac{128}{80\%}$ = **₹160 per unit**

Q.10 Calculation of Cost Sheet | PY May 23

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

	April 1	April 30
Opening and closing inventories data:		
Stock of finished goods	2,500 units	?
Stock of raw materials	₹ 42,500	₹ 38,600
Work-in progress	₹ 42,500	₹ 42,800
Other data are:		
Raw materials Purchased		₹ 6,95,000
Carriage inward		₹ 36,200
Direct wages paid		₹ 3,22,800
Royalty paid for production		₹ 35,800
Purchases of special designs, moulds and patterns (estimated life 12 Production cycles)		₹ 1,53,600
Power, fuel and haulage (factory)		₹ 70,600
Research and development costs for improving the production process (amortized)		₹ 31,680
Primary packing cost (necessary to maintain quality)		₹ 6920
Administrative Overhead		₹ 46,765
Salary and wages for supervisor and foremen		₹ 28,000

Other information:

- Opening stock of finished goods is to be valued at ₹ 8.05 per unit.
- During the month of April, 1,52,000 units were produced and 1,52,600 units were sold. The closing stock of finished goods is to be valued at the relevant month's cost of production. The company follows the FIFO method.
- Selling and distribution expenses are to be charged at 20 paisa per unit.
- Assume that one production cycle is completed in one month.

Required:

(i) Prepare a cost sheet for the month ended on April 30, 2023 , showing the various elements of cost (raw material consumed, prime cost, factory cost, cost of production, cost of goods sold, and cost of sales).

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

Ans.

Cost Sheet for the month of April 2023

Particulars	**Amount (₹)**	**Amount (₹)**
Raw materials consumed:		
Raw materials purchased	6,95,000	
Add: Carriage inward	36,200	
Add: Value of opening stock of raw materials	42,500	
Less: Value of closing stock of raw materials	(38,600)	**7,35,100**
Direct wages paid		3,22,800
Royalty paid for production		35,800
Amortised cost of special designs, moulds and patterns (₹153,600 ÷ 12)		12,800
Power, fuel and haulage (factory)*		70,600
Prime Cost*		**11,77,100**
Salary and wages of supervisor and foremen		28,000
Gross Works Cost		12,05,100
Add: Opening stock of WIP		42,500
Less: Closing stock of WIP		(42,800)
Factory/ Works Cost		**12,04,800**
Research and development cost	31,680	
Primary packing cost	6,920	38,600

Cost of Production		**12,43,400**
Add: Opening stock of finished goods (₹ 8.05 × 2,500 units)		20,125
Less: Value of closing stock [(2,500+152,000 -1,52,600) × (12,43,400÷152000)		(15,542)
Cost of Goods Sold		**12,47,983**
Add: Administrative overheads		46,765
Add: Selling and distribution expenses (₹ 0.20 × 1,52,600)		30,520
Cost of Sales		**13,25,268**
Add: Profit (20% on Sales or 25% on cost of sales)		3,31,317
Sales value		16,56,585
Selling price per unit (₹ 16,56,585 ÷ 1,52,600 units)		**10.86**

*May be taken as part of Factory / Works cost, however Total Factory Cost will remain the same. If taken as part of factory cost then prime cost will be ₹ 11,06,500.

Alternative Solution (Based on work-in-progress figure of ₹ 45,500 as on 1st April 2023 as per Hindi part of Question paper)

Particulars	Amount (₹)	Amount (₹)
Raw materials consumed:		
Raw materials purchased	6,95,000	
Add: Carriage inward	36,200	
Add: Value of opening stock of raw materials	42,500	
Less: Value of closing stock of raw materials	(38,600)	7,35,100
Direct wages paid		3,22,800
Royalty paid for production		35,800
Amortised cost of special designs, moulds and patterns (₹ 153,600 ÷ 12)		12,800
Power, fuel and haulage (factory)*		70,600
Prime Cost		**11,77,100**
Salary and wages of supervisor and foremen		28,000
Gross Works Cost		12,05,100
Add: Opening stock of WIP		45,500
Less: Closing stock of WIP		(42,800)
Factory/ Works Cost		**12,07,800**
Research and development cost	31,680	
Primary packing cost	6,920	38,600
Cost of Production		**12,46,400**
Add: Opening stock of finished goods (₹ 8.05 × 2,500 units)		20,125
Less: Value of closing stock [(2,500+1,52,000 -1,52,600) × (12,46,400÷1,52,000)		(15,580)
Cost of Goods Sold		**12,50,945**
Add: Administrative overheads		46,765
Add: Selling and distribution expenses (₹ 0.20 × 1,52,600)		30,520
Cost of Sales		**13,28,230**
Add: Profit (20% on Sales or 25% on cost of sales)		3,32,058
Sales value		16,60,288
Selling price per unit (₹ 16,60,288 ÷ 1,52,600 units)		**10.88**

*May be taken as part of Factory / Works cost, however Total Factory Cost will remain the same. If taken as part of factory cost then prime cost will be ₹ 11,06,500.

Q.11 Calculation of Cost Sheet | RTP Nov 20

The following details are available from the books of R Ltd. for the year ending 31st March 2020:

Particulars	Amount (₹)
Purchase of raw materials	84,00,000
Consumable materials	4,80,000
Direct wages	60,00,000
Carriage inward	1,72,600
Wages to foreman and store keeper	8,40,000
Other indirect wages to factory staffs	1,35,000
Expenditure on research and development on new production technology	9,60,000
Salary to accountants	7,20,000
Employer's contribution to EPF & ESI	7,20,000
Cost of power & fuel	28,00,000
Production planning office expenses	12,60,000
Salary to delivery staffs	14,30,000
Income tax for the assessment year 2019-20	2,80,000
Fees to statutory auditor	1,80,000
Fees to cost auditor	80,000
Fees to independent directors	9,40,000
Donation to PM-national relief fund	1,10,000
Value of sales	2,82,60,000
Position of inventories as on 01-04-2019:	
- Raw Material	6,20,000
- W-I-P	7,84,000
- Finished goods	14,40,000
Position of inventories as on 31-03-2020:	
- Raw Material	4,60,000
- W-I-P	6,64,000
- Finished goods	9,80,000

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From the above information PREPARE a cost sheet for the year ended 31st March 2020.

Ans. Statement of Cost of R Ltd. for the year ended 31st March, 2020:

Sl. No.	Particulars	Amount (₹)	Amount (₹)
(i)	Material Consumed:		
	- Raw materials purchased	84,00,000	
	- Carriage inward	1,72,600	
	Add: Opening stock of raw materials	6,20,000	
	Less: Closing stock of raw materials	(4,60,000)	87,32,600
(ii)	Direct employee (labour) cost:		
	- Direct wages	60,00,000	
	- Employer's Contribution towards PF & ESIS	7,20,000	67,20,000
(iii)	Direct expenses:		
	- Consumable materials	4,80,000	
	- Cost of power & fuel	28,00,000	32,80,000
	Prime Cost		1,87,32,600
(iv)	Works/ Factory overheads:		
	- Wages to foreman and store keeper	8,40,000	
	- Other indirect wages to factory staffs	1,35,000	9,75,000
	Gross factory cost		1,97,07,600

	Add: Opening value of W-I-P		7,84,000
	Less: Closing value of W-I-P		(6,64,000)
	Factory Cost		1,98,27,600
(v)	Research & development cost paid for improvement in production process		9,60,000
(vi)	Production planning office expenses		12,60,000
	Cost of Production		2,20,47,600
	Add: Opening stock of finished goods		14,40,000
	Less: Closing stock of finished goods		(9,80,000)
	Cost of Goods Sold		2,25,07,600
(vii)	Administrative overheads:		
	- Salary to accountants	7,20,000	
	- Fees to statutory auditor	1,80,000	
	- Fees to cost auditor	80,000	
	- Fee paid to independent directors	9,40,000	
	- Income tax for the assessment year 2019-20	2,80,000	
	- Donation to PM-national relief fund	1,10,000	23,10,000
(viii)	Selling overheads& Distribution overheads:		
	- Salary to delivery staffs		14,30,000
	Cost of Sales		2,62,47,600
	Profit (balancing figure)		20,12,400
	Sales		2,82,60,000

Q.12 Calculation of Cost Sheet | RTP Nov 23

A Ltd. produces a single product X. During the month of July 2023, the company has produced 14,560 tonnes of X. The details for the month of July 2023 are as follows:

(i) Materials consumed ₹ 15,00,000
(ii) Power consumed in operating production machinery 13,000 Kwh @ ₹ 7 per Kwh
(iii) Diesels consumed in operating production machinery 1,000 litres @ ₹ 93 per litre
(iv) Wages & salary paid – ₹ 64,00,000
(v) Gratuity & leave encashment paid – ₹ 44,20,000
(vi) Hiring charges paid for Heavy Earth Moving machines (HEMM) engaged in production - ₹ 13,00,000. Hiring charges is paid on the basis of production.
(vii) Hiring charges paid for cars used for official purpose – ₹ 80,000
(viii) Reimbursement of diesel cost for the cars – ₹ 20,000
(ix) The hiring of cars attracts GST under RCM @5% without credit.
(x) Maintenance cost paid for weighing bridge (used for weighing of final goods at the time of despatch) – ₹ 7,000
(xi) AMC cost of CCTV installed at weighing bridge (used for weighing of final goods at the time of despatch) and factory premises is ₹ 6,000 and ₹ 18,000 per month respectively.
(xii) TA/ DA and hotel bill paid for sales manager- ₹ 16,000
(xiii) The company has 180 employees works for 26 days in a month.

Required: PREPARE a Cost sheet for the month of July 2023.

Ans. **Cost Sheet of A Ltd. for the month of July 2023**

Particulars	Amount (₹)	Amount (₹)
Materials consumed		15,00,000
Wages & Salary	64,00,000	
Gratuity & leave encashment	44,20,000	1,08,20,000

Power cost (13,000 kwh × ₹ 7)	91,000	
Diesel cost (1,000 ltr × ₹ 93)	93,000	1,84,000
HEMM hiring charges		13,00,000
Prime Cost		**1,38,04,000**
AMC cost of CCTV installed at factory premises		18,000
Cost of Production/ Cost of Goods Sold		**1,38,22,000**
Hiring charges of cars	80,000	
Reimbursement of diesel cost	20,000	
	1,00,000	
Add: GST @5% on RCM basis	5,000	1,05,000
Maintenance cost for weighing bridge	7,000	
AMC cost of CCTV installed at weigh bridge	6,000	13,000
TA/ DA & hotel bill of sales manager		16,000
Cost of Sales		**1,39,56,000**

Q.13 Calculation of Cost Sheet | MTP May 23(2)

K Ltd. has the following expenditures for the year ended 31st March, 2023:

Sl. No.		Amount (₹)	Amount (₹)
(i)	Raw materials purchased		10,00,00,000
(ii)	Freight inward		11,20,600
(iii)	Wages paid to factory workers		29,20,000
(iv)	Royalty paid for production		1,72,600
(v)	Amount paid for power & fuel (Directly related to production)		4,62,000
(vi)	Job charges paid to job workers		8,12,000
(vii)	Stores and spares consumed		1,12,000
(viii)	Depreciation on office building		56,000
(ix)	Repairs & Maintenance paid for:		
	- Plant & Machinery	48,000	
	- Sales office building	18,000	66,000
(x)	Insurance premium paid for:		
	- Plant & Machinery	31,200	
	- Factory building	18,100	49,300
(xi)	Expenses paid for quality control check activities		19,600
(xii)	Research & development cost paid improvement in production process		18,200
(xiii)	Expenses paid for pollution control and engineering & maintenance		26,600
(xiv)	Salary paid to Sales & Marketing mangers:		10,12,000
(xv)	Salary paid to General Manager		12,56,000
(xvi)	Packing cost paid for:		
	- Primary packing necessary to maintain quality	96,000	
	- For re-distribution of finished goods	1,12,000	2,08,000
(xvii)	Fee paid to independent directors		2,20,000

(xviii)	Performance bonus paid to sales staffs		1,80,000
(xix)	Value of stock as on 1st April, 2022:		
	- Raw materials	18,00,000	
	- Work-in-process	9,20,000	
	- Finished goods	11,00,000	38,20,000
(xx)	Value of stock as on 31st March, 2023:		
	- Raw materials	9,60,000	
	- Work-in-process	8,70,000	
	- Finished goods	18,20,000	36,50,000

Amount realized by selling of scrap and waste generated during manufacturing process – ₹86,000/- From the above data you are requested to PREPARE Statement of cost for K Ltd. for the year ended 31st March, 2023, showing (i) Prime cost, (ii) Factory cost, (iii) Cost of Production, (iv) Cost of goods sold and (v) Cost of sales.

Ans. **Statement of Cost of K Ltd. for the year ended 31st March, 2023:**

Sl. No.	Particulars	Amount (₹)	Amount (₹)
(i)	Material Consumed:		
	- Raw materials purchased	10,00,00,000	
	- Freight inward	11,20,600	
	Add: Opening stock of raw materials	18,00,000	
	Less: Closing stock of raw materials	(9,60,000)	10,19,60,600
(ii)	Direct employee (labour) cost:		
	- Wages paid to factory workers		29,20,000
(iii)	Direct expenses:		
	- Royalty paid for production	1,72,600	
	- Amount paid for power & fuel	4,62,000	
	- Job charges paid to job workers	8,12,000	14,46,600
	Prime Cost		10,63,27,200
(iv)	Works/ Factory overheads:		
	- Stores and spares consumed	1,12,000	
	- Repairs & Maintenance paid for plant & machinery	48,000	
	- Insurance premium paid for plant & machinery	31,200	
	- Insurance premium paid for factory building	18,100	
	- Expenses paid for pollution control and engineering & maintenance	26,600	2,35,900
	Gross factory cost		10,65,63,100
	Add: Opening value of W-I-P		9,20,000
	Less: Closing value of W-I-P		(8,70,000)
	Factory Cost		10,66,13,100
(v)	Quality control cost:		
	- Expenses paid for quality control check activities		19,600
(vi)	Research & development cost paid improvement in production process		18,200
(vii)	Less: Realisable value on sale of scrap and waste		(86,000)
(viii)	Add: Primary packing cost		96,000
	Cost of Production		10,66,60,900
	Add: Opening stock of finished goods		11,00,000
	Less: Closing stock of finished goods		(18,20,000)

	Cost of Goods Sold		10,59,40,900
(ix)	Administrative overheads:		
	- Depreciation on office building	56,000	
	- Salary paid to General Manager	12,56,000	
	- Fee paid to independent directors	2,20,000	15,32,000
(x)	Selling overheads:		
	- Repairs & Maintenance paid for sales office building	18,000	
	- Salary paid to Manager- Sales & Marketing	10,12,000	
	- Performance bonus paid to sales staffs	1,80,000	12,10,000
(xi)	Distribution overheads:		
	- Packing cost paid for re-distribution of finished goods		1,12,000
	Cost of Sales		10,87,94,900

Q.14 Calculation of Cost Sheet | ICAI MAT

Arnav Inspat Udyog Ltd. has the following expenditures for the year ended 31st March 2023:

Sl. No.		(₹)	(₹)
(i)	Raw materials purchased		10,00,00,000
(ii)	GST paid on the above purchases @18% (eligible for input tax credit)		1,80,00,000
(iii)	Freight inwards		11,20,600
(iv)	Wages paid to factory workers		29,20,000
(v)	Contribution made towards employees' PF & ESIS		3,60,000
(vi)	Production bonus paid to factory workers		2,90,000
(vii)	Royalty paid for production		1,72,600
(viii)	Amount paid for power & fuel		4,62,000
(ix)	Amount paid for purchase of moulds and patterns (life is equivalent to two years production)		8,96,000
(x)	Job charges paid to job workers		8,12,000
(xi)	Stores and spares consumed		1,12,000
(xii)	Depreciation on:		
	Factory building	84,000	
	Office building	56,000	
	Plant & Machinery	1,26,000	
	Delivery vehicles	86,000	3,52,000
(xiii)	Salary paid to supervisors		1,26,000
(xiv)	Repairs & Maintenance paid for: Plant & Machinery	48,000	
	Sales office building	18,000	
	Vehicles used by directors	19,600	85,600
(xv)	Insurance premium paid for:		
	Plant & Machinery	31,200	

	Factory building	18,100	
	Stock of raw materials & WIP	36,000	85,300
(xvi)	Expenses paid for quality control check activities		19,600
(xvii)	Salary paid to quality control staffs		96,200
(xviii)	Research & development cost paid for improvement in production process		18,200
(xix)	Expenses paid for pollution control and engineering & maintenance		26,600
(xx)	Expenses paid for administration of factory work		1,18,600
(xxi)	Salary paid to functional mangers:		
	Production control	9,60,000	
	Finance & Accounts	9,18,000	
	Sales & Marketing	10,12,000	28,90,000
(xxii)	Salary paid to General Manager		12,56,000
(xxiii)	Packing cost paid for:		
	Primary packing necessary to maintain quality	96,000	
	For re-distribution of finished goods	1,12,000	2,08,000
(xxiv)	Interest and finance charges paid (for usage of non-equity fund)		7,20,000
(xxv)	Fee paid to auditors		1,80,000
(xxvi)	Fee paid to legal advisors		1,20,000
(xxvii)	Fee paid to independent directors		2,20,000
(xxviii)	Performance bonus paid to sales staffs		1,80,000
(xxix)	Value of stock as on 1st April, 2022:		
	Raw materials	18,00,000	
	Work-in-process	9,20,000	
	Finished goods	11,00,000	38,20,000
(xxx)	Value of stock as on 31st March, 2023:		
	Raw materials	9,60,000	
	Work-in-process	8,70,000	
	Finished goods	18,00,000	36,30,000

Amount realized by selling of scrap and waste generated during manufacturing process – ₹ 86,000/-

From the above data you are required to PREPARE Statement of cost for Arnav Ispat Udyog Ltd. for the year ended 31st March, 2023, showing (i) Prime cost, (ii) Factory cost, (iii) Cost of Production, (iv) Cost of goods sold and (v) Cost of sales.

Ans. **Statement of Cost of Arnav Ispat Udyog Ltd. for the year ended 31st March, 2023:**

Sl.No.	Particulars	(₹)	(₹)
(i)	Material Consumed:		
	Raw materials purchased	10,00,00,000	

	Freight inwards	11,20,600	
	Add: Opening stock of raw materials	18,00,000	
	Less: Closing stock of raw materials	(9,60,000)	10,19,60,600
(ii)	Direct employee (labour) cost:		
	Wages paid to factory workers	29,20,000	
	Contribution made towards employees' PF & ESIS	3,60,000	
	Production bonus paid to factory workers	2,90,000	35,70,000
(iii)	Direct expenses:		
	Royalty paid for production	1,72,600	
	Amount paid for power & fuel	4,62,000	
	Amortised cost of moulds and patterns	4,48,000	
	Job charges paid to job workers	8,12,000	18,94,600
	Prime Cost		**10,74,25,200**
(iv)	Works/ Factory overheads:		
	Stores and spares consumed	1,12,000	
	Depreciation on factory building	84,000	
	Depreciation on plant & machinery	1,26,000	
	Repairs & Maintenance paid for plant & machinery	48,000	
	Insurance premium paid for plant & machinery	31,200	
	Insurance premium paid for factory building	18,100	
	Insurance premium paid for stock of raw materials & WIP	36,000	
	Salary paid to supervisors	1,26,000	
	Expenses paid for pollution control and engineering & maintenance	26,600	6,07,900
	Gross factory cost		**10,80,33,100**
	Add: Opening value of W-I-P		9,20,000
	Less: Closing value of W-I-P		(8,70,000)
	Factory Cost		**10,80,83,100**
(v)	Quality control cost:		
	Expenses paid for quality control check activities	19,600	
	Salary paid to quality control staffs	96,200	1,15,800
(vi)	Research & development cost paid for improvement in production process		18,200
(vii)	Administration cost related with production:		
	-Expenses paid for administration of factory work	1,18,600	
	-Salary paid to Production control manager	9,60,000	10,78,600
(viii)	Less: Realisable value on sale of scrap and waste		(86,000)
(ix)	Add: Primary packing cost		96,000
	Cost of Production		**10,93,05,700**

	Add: Opening stock of finished goods		11,00,000
	Less: Closing stock of finished goods		(18,00,000)
	Cost of Goods Sold		**10,86,05,700**
(x)	Administrative overheads:		
	Depreciation on office building	56,000	
	Repairs & Maintenance paid for vehicles used by directors	19,600	
	Salary paid to Manager- Finance & Accounts	9,18,000	
	Salary paid to General Manager	12,56,000	
	Fee paid to auditors	1,80,000	
	Fee paid to legal advisors	1,20,000	
	Fee paid to independent directors	2,20,000	27,69,600
(xi)	Selling overheads:		
	Repairs & Maintenance paid for sales office building	18,000	
	Salary paid to Manager- Sales & Marketing	10,12,000	
	Performance bonus paid to sales staffs	1,80,000	12,10,000
(xii)	Distribution overheads:		
	Depreciation on delivery vehicles	86,000	
(xiii)	Packing cost paid for re-distribution of finished goods	1,12,000	1,98,000
(xiv)	Interest and finance charges paid		7,20,000
	Cost of Sales		**11,35,03,300**

Note:
GST paid on purchase of raw materials would not be part of cost of materials as it is eligible for input tax credit.

Q.15 Calculation of Cost Sheet | ICAI MAT

The following figures are extracted from the Trial Balance of G.K Co. on 31st March:

	Dr. (₹)	Cr. (₹)
Inventories:		
Finished Stock	80,000	
Raw Materials	1,40,000	
Work-in-Process	2,00,000	
Office Appliances	17,400	
Plant & Machinery	4,60,500	
Building	2,00,000	
Sales		7,68,000
Sales Return and Rebates	14,000	
Materials Purchased	3,20,000	
Freight incurred on Materials	16,000	

Purchase Returns		4,800
Direct employee cost	1,60,000	
Indirect employee cost	18,000	
Factory Supervision	10,000	
Repairs and factory up-keeping expenses	14,000	
Heat, Light and Power	65,000	
Rates and Taxes	6,300	
Miscellaneous Factory Expenses	18,700	
Sales Commission	33,600	
Sales Travelling	11,000	
Sales Promotion	22,500	
Distribution Deptt.—Salaries and Expenses	18,000	
Office Salaries and Expenses	8,600	
Interest on Borrowed Funds	2,000	

Further details are available as follows:

(i)	Closing Inventories:	
	Finished Goods	1,15,000
	Raw Materials	1,80,000
	Work-in-Process	1,92,000
(ii)	Outstanding expenses on:	
	Direct employee cost	8,000
	Indirect employee cost	1,200
	Interest on Borrowed Funds	2,000
(iii)	Depreciation to be provided on:	
	Office Appliances	5%
	Plant and Machinery	10%
	Buildings	4%
(iv)	Distribution of the following costs:	
Heat, Light and Power to Factory, Office and Distribution in the ratio 8 : 1 : 1.		
Rates and Taxes two-thirds to Factory and one-third to Office.		
Depreciation on Buildings to Factory, Office and Selling in the ratio 8 : 1 : 1.		

With the help of the above information, you are required to PREPARE a condensed Profit and Loss Statement of G.K Co. for the year ended 31st March along with supporting schedules of:

(i) Cost of Sales.

(ii) Selling and Distribution Expenses.

(iii) Administration Expenses

Ans.

Profit and Loss Statement of G.K Co.
for the year ended 31st March

	(₹)	(₹)
Gross Sales	7,68,000	
Less: Returns and rebates	(14,000)	7,54,000

Less: Cost of Sales (excluding interest on borrowed funds) [Refer to Schedule (i)]		(7,14,020)
Net Operating Profit		39,980
Less: Interest on borrowed funds (2,000+2,000)		(4,000)
Net Profit		**35,980**

(i) Schedule of Cost of Sales

	(₹)	(₹)
Raw Material (Inventory opening balance)		1,40,000
Add: Material Purchased	3,20,000	
Add: Freight on Material	16,000	
Less: Purchase Returns	(4,800)	3,31,200
		4,71,200
Less: Closing Raw Material Inventory		(1,80,000)
Materials consumed in Production		2,91,200
Direct employee cost (₹1,60,000 + ₹8,000)		1,68,000
Prime Cost		**4,59,200**
Factory Overheads:		
Indirect employee cost (₹18,000 + ₹1,200)	19,200	
Factory Supervision	10,000	
Repairs and factory up-keeping expenses	14,000	
Heat, Light and Power (₹65,000 × 8/10)	52,000	
Rates and Taxes (₹6,300 × 2/3rd)	4,200	
Miscellaneous Factory Expenses	18,700	
Depreciation of Plant (10% of ₹4,60,500)	46,050	
Depreciation of Buildings (4% of ₹2,00,000 × 8/10)	6,400	1,70,550
Gross Works Cost		**6,29,750**
Add: Opening Work-in-Process inventory		2,00,000
Less: Closing Work-in-Process inventory		(1,92,000)
Cost of production		**6,37,750**
Add: Opening Finished Goods inventory		80,000
Less: Closing Finished Goods inventory		(1,15,000)
Cost of Goods Sold		**6,02,750**
Add: Administration Expenses [*See* Schedule (*iii*)]		18,870
Add: Selling and Distribution Expenses [*See* Schedule (*ii*)]		92,400
Cost of Sales (excluding interest on borrowed funds)		**7,14,020**

Alternatively, Interest on borrowed funds of ₹ 4,000 (₹ 2,000 + ₹ 2,000) may be added to arrive at cost of sales.

(ii) Schedule of Selling and Distribution Expenses

	(₹)
Sales Commission	33,600
Sales Travelling	11,000
Sales Promotion	22,500
Distribution Deptt.—Salaries and Expenses	18,000
Heat, Light and Power	6,500
Depreciation of Buildings	800
	92,400

(iii) Schedule of Administration Expenses

	(₹)
Office Salaries and Expenses	8,600
Depreciation of Office Appliances	870
Depreciation of Buildings	800
Heat, Light and Power	6,500
Rates and Taxes	2,100
	18,870

Q.16 PY Nov 23

The following data relate to the manufacture of a product 'VD-100* during the month of October 2023:

Good units produced	12,600
Units Sold	11,800
Direct wages	₹ 8,82,000
Administrative Overheads	₹ 4,72,000
Selling price per unit	₹ 416

Each unit produced requires 2 kg. of material 'Z'. Cost of material 'Z' is ₹ 72 per kg. 10% of the production has been scrapped as bad and fetches ₹ 45 per unit. Factory overheads are 80% of wages. Selling and distribution overheads are ₹ 54 per unit sold. There is no opening or closing stock of material and work in progress.
You are required to find out total cost of sales and profit for the month of October 2023.

Ans. **Since 10% units are scrapped.**
Units produced (total) is 14,000 (12,600/90%)

Calculation of cost of sales and profit

Particulars	₹
Raw Material (28,000 × ₹ 72)	20,16,000
Wages	8,82,000
Prime Cost	**28,98,000**
Factory overheads	7,05,600
Factory Cost	**36,03,600**
Sale of Scrap (1,400 × ₹ 45)	(63,000)

Cost of Production	**35,40,600**
Less: Closing Stock of finished goods $\left(\frac{35,40,600}{12,600} x800\right)$	2,24,800
Cost of goods sold	33,15,800
Add: Administration overheads	4,72,000
Add: Selling & Distribution overheads (₹ 54 x 11,800)	6,37,200
Cost of Sales	**44,25,000**
Sales (11,800 × ₹ 416)	49,08,800
Profit	**4,83,800**

Q.17 PY Sep 24

MNP Limited have the capacity to produce 84,000 units of a product very month. Its prime cost per unit at various levels of production is as follows:

Level	Prime Cost per unit (₹)
10%	50
20%	48
30%	46
40%	44
50%	42
60%	40
70%	38
80%	36
90%	34
100%	32

Its prime cost consists of raw material consumed, direct wages and direct expenses in the ratio of 3 : 2 : 1. In the month of January 2024, the company worked at 40% capacity and raw material purchased amounting to ₹ 8,40,000. In the month of February 2024, the company worked at 100% capacity and raw material purchased for ₹ 16,46,400.

It is the policy of the company to maintain opening stock of raw material equal to 1/3 of closing stock of raw material. Factory overheads are recovered at 60% of direct wages cost. Fixed administration expenses (as part of production cost) and fixed selling and distribution expenses are ₹ 2,01,600 and ₹ 1,68,000 per month respectively. During the month of January 2024 company sold 33,600 units @ ₹ 68.8 per unit. The variable distribution cost amounts to ₹ 1.5 per unit sold.

The management of the company chalks out a pl for the month of February 2024 to sell its whole output @ ₹ 61 per unit by incurring following further expenditure :

(i) Company sponsors a television programme on every Sunday at a cost of ₹ 26,250 per week. There are 4 Sundays in February 2024.

(ii) Hi-tea programme every month for its potential customers at a cost of ₹ 1,05,000.

(iii) Special gift item costing ₹ 105 on sale of a dozen units.

(iv) Lucky draws scheme is introduced every month by giving the first prize of ₹ 1,00,000; second prize of ₹ 80,000; third prize of ₹ 40,000 and four consolation prizes of ₹ 8,000 each.

Note: (In the month of February 2024, there is a significant saving in material cost per unit due to entry of new suppliers in the market and saving in per unit cost of Direct wages and Direct expenses due to introduction of new• policy by the management.)
Prepare a cost sheet for the month of January 2024 and February 2024 showing prime cost (with different elements of prime cost), factory cost, cost of production, total cost and profit earned.

Ans.

Cost Sheet

Particulars	January 2024	February 2024
	33,600 Units	84,000 Units
Opening Stock of Raw Material	50,400	1,51,200
Add: Purchases	8,40,000	16,46,400
Less: Closing stock of Raw Material	(1,51,200)	(4,53,600)
Direct materials consumed:	**7,39,200**	**13,44,000**
Direct Wages	4,92,800	8,96,000
Direct expenses	2,46,400	4,48,000
Prime Cost	**14,78,400**	**26,88,000**
Factory overheads (60% of direct wages)	2,95,680	5,37,600
Factory / Works Cost	**17,74,080**	**32,25,600**
Add: Administration overhead (Production)	2,01,600	2,01,600
Cost of Production / Cost of goods sold	**19,75,680**	**34,27,200**
Add: Fixed selling and distribution Overhead	1,68,000	1,68,000
Variable distribution overheads (₹ 1.5 per unit)	50,400	1,26,000
- Sponsorship cost	-	1,05,000
- Hi tea programme	-	1,05,000
- Special gifts (84,000 x 1/12 x 105)	-	7,35,000
- Lucky draw prize *	-	2,52,000
Cost of sales / Total Cost	**21,94,080**	**49,18,200**
Profit (Balancing figure)	1,17,600	2,05,800
Sales revenue	**23,11,680**	**51,24,000**

***Lucky draw prize:**

	Amount (₹)
1st Prize	1,00,000
2nd Prize	80,000
3rd Prize	40,000
Consolation Prizes (4 × ₹ 8,000)	32,000
Total	2,52,000

Working note :
Calculation of opening and costing stock of Raw Material January
Units Manufactured = 84,000 x 40% = 33,600 units
Prime Cost = 33,600 x 44 = ₹ 14,78,400
Raw Material consumed = ₹ 14,78,400 X 3/6 = ₹ 7,39,200
Raw Material purchase (given) = ₹ 8,40,000
Let closing stock of Raw Material be x
Opening stock of Raw Material be 1/3x

Opening Stock + Purchase – closing stock = Raw Material consumed
1/3x + ₹ 8,40,000 – x = ₹ 7,39,200
1/3x – x = ₹ 7,39,200 – ₹ 8,40,000
2/3x = ₹ 1,00,800
x = ₹ 1,51,200 (closing stock)
Opening stock = ₹ 1,51,200 x 1/3 = ₹ 50,400

February
Prime Cost = 84,000 x 32 = ₹ 26,88,000
Raw Material consumed = ₹ 26,88,000 x 3/6 = ₹ 13,44,000
Raw Material purchased (given) = ₹ 16,46,400
Opening Stock + Purchase – closing stock = Raw Material consumed
₹ 1,51,200 + ₹ 16,46,400 – closing stock = ₹ 13,44,000
Closing stock = ₹ 4,53,600

Q.18 PY Jan 25

The following information relates to a manufacturing concern A Ltd. for the year ended 31stMarch, 2024.

Particulars	As on 1st April,2023	As on 31st March,2024
Raw Material (in ₹)	3,40,000	1,80,000
Work in Progress (in ₹)	5,50,000	3,50,000

Particulars	Amount
Raw Material Purchased [Inclusive of GST@18% (Ineligible for ITC)]	8,00,000
Packaging Cost (primary)	3,00,000
Fee Paid to Independent Directors	5,00,000
Production bonus paid to factory workers	10% of Wages paid to factory workers
Job charges paid to job workers	41,000
Salary paid to Supervisor	6,17,900
Wages paid to factory workers	6,30,000
Salary paid to Production Control Manager	7,20,000
Sale of Scrap generated during Manufacturing	50,000
Selling Overheads per unit	2
Salary paid to General Manager	12,40,000
Freight Inwards	2% on Raw Material Purchased
Expenses Paid for Quality Control check activities	4,30,000

Particulars	Cost Price (₹)	WDV as on 1st April, 2023 (₹)	Depreciation Rate	Insurance Cost per annum
Factory Building	25,00,000	21,87,000	10%	2% of Cost Price
Plant and Machinery	15,00,000	11,56,000	15%	2% of Cost

				Price
Office Building	40,00,000	36,00,000	10%	Nil

Additional information:

(i) Depreciation is charged on the written down value method.

(ii) Stock of finished goods as on 1st April, 2023 was 80,000 units having a total cost of 8,00,000. The entire stock of opening finished goods is sold during the year, closing stock is 70,000 units. During the period, 4,50,000 units were sold.

(iii) A Ltd. wants a profit of 20% on Total Sales. Required:

Prepare a Cost statement showing the various elements of cost and profit earned for the year ended 31stMarch, 2024.

Ans.

Cost Sheet

Particulars	**(₹)**	**(₹)**
Material Consumed:		
Raw materials purchased	8,00,000	
Freight inwards (2% of Raw materials purchased)	16,000	
Add: Opening stock of raw materials	3,40,000	
Less: Closing stock of raw materials	(1,80,000)	9,76,000
Direct employee (labour) cost:		
Wages paid to factory workers	6,30,000	
Production bonus paid to factory workers (10%)	63,000	6,93,000
Direct expenses:		
Job charges paid to job workers	41,000	41,000
Prime Cost		**17,10,000**
Works/ Factory overheads:		
Depreciation on factory building (21,87,000 x 10%)	2,18,700	
Depreciation on plant & machinery (11,56,000 x 15%)	1,73,400	
Insurance premium paid for plant & machinery (15,00,000 x 2%)	30,000	
Insurance premium paid for factory building (25,00,000 x 2%)	50,000	
Salary paid to supervisors	6,17,900	10,90,000
Gross factory cost		**28,00,000**
Add: Opening value of W-I-P		5,50,000
Less: Closing value of W-I-P		(3,50,000)
Factory Cost		**30,00,000**
Quality control cost:		
Expenses paid for quality control check activities	4,30,000	4,30,000
Administration cost related with production:		
Salary paid to Production control manager	7,20,000	7,20,000
Less: Realisable value on sale of scrap and waste		(50,000)

Add: Primary packing cost		3,00,000
Cost of Production		**44,00,000**
Add: Opening stock of finished goods (80,000 units)		8,00,000
Less: Closing stock of finished goods (70,000 units)		(7,00,000)
Cost of Goods Sold		**45,00,000**
Administrative overheads:		
Depreciation on office building (36,00,000 x 10%)	3,60,000	
Salary paid to General Manager	12,40,000	
Fee paid to independent directors	5,00,000	
Selling Overheads (4,50,000 units x ₹2):	9,00,000	30,00,000
Cost of Sales		**75,00,000**
Profit (25% on cost)		18,75,000
Sales		**93,75,000**

Working Note: Calculation of value of closing finished goods.
Number of units produced = units sold + closing stock – opening stock
= 4,50,000 + 70,000 – 80,000
= 4,40,000 units

$$\text{Per unit cost} = \frac{\text{Cost of production}}{\text{Number of units produced}}$$ Cost of production Number of units produced

$$= \frac{44,00,000}{4,40,000\ units} = ₹\ 10 \text{ per unit}$$

Q.19 MTP May25(2)

The following information is made available:

Opening stock of Work in progress	-	₹ 60,000
Opening Raw Materials	-	₹ 1,20,000
Opening Finished Goods	-	₹ 1,13,250
Purchase of Materials	-	₹ 7,50,000
Indirect manufacturing costs	-	40% of conversion costs
Sales Revenue	-	₹ 22,50,000
Direct Labour	-	₹6,66,750
Prime Costs	-	₹ 11,93,250
Gross margin	-	30% of revenue
Cost of goods available for sale	-	₹ 16,67,325

From the above DETERMINE the following:

a. Closing Raw Materials
b. Closing Work in progress
c. Closing Finished Goods.

Ans. Prime cost = 11,93,250

Direct Labour = 6,66,750
Direct Material consumed (Prime cost – Direct Labour) = 5,26,500
Opening Raw Material (RM) = 1,20,000
Purchase of RM = 7,50,000
Closing RM (Op RM + Purchases – Materials Consumed) = 3,43,500
Sales 22,50,000
Less: Gross profit @ 30% 6,75,000
Cost of Sales 15,75,000
Cost of goods available for sales 16,67,325
Hence Closing Finished goods (FG) 92,325 (16,67,325 – 15,75,000)
Opening Finished goods 1,13,250
Cost of Production (Cost of Sales + Closing FG – Opening FG) =15,54,075
Conversion costs = Labour + Production Overhead
Overhead = 40% and hence labour = 60%
Hence total conversion cost = 6,66,750/60% = 11,11,250
Hence POH (Total conversion – Labour cost) = 4,44,500
Works Cost = 16,37,750
Opening Work in progress (WIP) = 60,000
Closing Work in progress (Work Cost + Opening WIP – Closing WIP) = 1,43,675

Q.20 MTP Sep24(2)

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

	Units	Amount (₹)
Opening stock	10,000	5,00,00,000
Purchases	4,90,000	25,20,00,000
Closing stock	17,500	85,00,000
Works-in-progress		
Opening	20,000	1,20,00,000
Closing	10,000	60,50,000
Direct employees' wages, 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

Ans.

Particulars	**Units**	**Amount (₹)**
Material		
Opening stock	10,000	5,00,00,000
Add: Purchases	4,90,000	25,20,00,000
Less: Closing stock	(17,500)	(85,00,000)
	4,82,500	**29,35,00,000**
Less: Normal wastage of materials realized @ ₹ 350 per unit	(2,000)	(7,00,000)
Material consumed		29,28,00,000
Direct employee's wages and allowances		5,50,50,000
Direct expenses- Royalty paid for production		3,10,50,000
Prime cost	4,80,500	**37,89,00,000**
Factory overheads - Consumable stores, depreciation etc.		3,42,00,000
Rearrangement design of factory machine		75,00,000
Gross Works Cost	4,80,500	**38,64,00,000**
Add: Opening WIP	20,000	1,20,00,000
Less: Closing WIP	(10,000)	(60,50,000)
Factory/Works Cost	4,90,500	**39,23,50,000**
Administration Overheads related to production		3,45,00,000
R&D expenses and Quality control cost		1,90,00,000
AMC cost of CCTV installed at factory premises		6,00,000
Guard Salaries for factory premises		14,00,000
Product Inspection		22,00,000
Add: Primary packaging cost @ ₹ 140 per unit		6,86,70,000
Cost of production Administration Overheads	4,90,500	**51,87,20,000**
Guard salaries for office		4,00,000
Audit and legal fees		29,00,000
Director's Salaries		60,00,000
EPF Director's Salaries @12%		7,20,000
AMC cost for CCTV installed at office.		2,00,000
Selling and Distribution Overheads		
Cost of maintaining website for online sale		60,75,000
Secondary packaging cost @ ₹ 20 per unit	4,90,500	98,10,000
Gift and snacks		30,50,000
Guard salaries for selling department		2,00,000
AMC cost for CCTV installed at selling department		2,00,000

Hiring charges of cars		25,00,000
Add: GST @5% on RCM basis		1,25,000
Television programme sponsorship cost		20,00,000
Customers' prize cost*		2,00,000
Selling expenses		3,94,50,000
Cost of sales		**58,64,75,000**
Add: Profit @ 25% on sales or 33.333% of cost		19,54,89,712
Sales value		**78,19,64,712**

*Customers' prize cost:

	Amount (₹)
1st Prize	1,00,000
2nd Prize	50,000
3rd Prize	20,000
Consolation Prizes (3 × ₹10,000)	30,000
Total	**2,00,000**

*Customers' prize cost:

	Amount (₹)
1st Prize	1,00,000
2nd Prize	50,000
3rd Prize	20,000
Consolation Prizes (3 × ₹10,000)	30,000
Total	**2,00,000**

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2 CHAPTER MATERIAL COST

Q.1 ABC Analysis | PY July 21

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

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

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

You are required to:

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

(ii) Classify the items into A, B and C categories as per ABC Analysis of Inventory Control adopted by MM Ltd.

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

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

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

Basis for ABC Classification as % of Total Inventory Cost

15% & above -- 'A' items

7% to 14% -- 'B' items

6% & Less -- 'C' items

Ranking	Item code No.	of Total units	Total Inventory cost (₹)	% of Total Inventory Cost	Category
1	103	6.67	4,000	53.33	
2	101	3.33	1,250	16.67	
Total	2	10.00	5,250	70.00	A
3	106	10.00	900	12.00	
4	104	10.00	600	8.00	

Total	2	20.00	1,500	20.00	B
5	105	30.00	450	6.00	
6	102	40.00	300	4.00	
Total	2	70.00	750	10.00	C
Grand Total	6	100	7,500	100	

Q.2 ABC Analysis | MTP May 18

A store keeper has prepared the below list of items kept in the store of the factory.

Item	Units	Unit cost (₹)
A	12,000	30.00
B	18,000	3.00
C	6,000	35.00
D	750	220.00
E	3,800	75.00
F	400	105.00
G	600	300.00
H	300	350.00
I	3,000	250.00
J	20,000	7.50
K	11,500	27.50
L	2,100	75.00

The store keeper requires your help to classify the items for prioritization. You are required to APPLY ABC analysis to classify the store items as follows:
Store items which constitutes approx 70%, 20% and 10% of total value as A, B and C respectively.

Ans. Statement of Total Cost and Ranking

Item	Units	% of Total units	Unit cost (₹)	Total cost (₹)	% of Total cost	Ranking
A	12,000	15.30%	30.00	3,60,000	12.97%	2
B	18,000	22.94%	3.00	54,000	1.95%	11
C	6,000	7.65%	35.00	2,10,000	7.57%	5
D	750	0.96%	220.00	1,65,000	5.95%	7
E	3,800	4.84%	75.00	2,85,000	10.27%	4
F	400	0.51%	105.00	42,000	1.51%	12
G	600	0.76%	300.00	1,80,000	6.49%	6
H	300	0.38%	350.00	1,05,000	3.78%	10
I	3,000	3.82%	250.00	7,50,000	27.03%	1
J	20,000	25.49%	7.50	1,50,000	5.41%	9
K	11,500	14.66%	27.50	3,16,250	11.40%	3
L	2,100	2.68%	75.00	1,57,500	5.68%	8
	78,450	100.00%		27,74,750	100.00%	

Q.3 All Formulas | RTP Nov 22

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

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

Consider 365 days a year.

You are required to CALCULATE:

(a) Economic Order Quantity
(b) Re-Order Level (ROL)
(c) Maximum Stock Level
(d) Minimum Stock Level
(e) Average Stock Level
(f) Number of Orders to be placed per year
(g) Total Inventory Cost
(h) If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders, whether offer is acceptable?
(i) If the answer is no, what should be the counteroffer w.r.t. percentage of discount?

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

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

Minimum Consumption per Day: $\frac{210}{7}$ = 30 Kgs.

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

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(a) Calculation of Economic Order Quantity (EOQ)

Annual consumption of Raw Materials (A): 40 Kgs x 365 days = 14,600 Kgs
Storage or Carrying Cost per unit per annum (C):(₹ 100 x 1% x 12 months) + ₹ 2 = ₹ 14
Ordering Cost (O): ₹ 200 per Order

$$EOQ = \sqrt{\frac{2 \times A \times O}{C}}$$

$$= \sqrt{\frac{2 \times 14600{,}600 \times 200}{14}} = 646 \text{ Kgs.}$$

(b) Re-Order Level (ROL) = (Maximum consumption Rate × Maximum Procurement Time)
= 50 kgs per day × 9 days
= 450 kgs

(c) Maximum Stock Level = Recorder Level + Recorder Quantity – (Minimum Consumption Rate × Minimum Procurement Time)
= 450 kgs + 646 kgs - (30 kgs X 5 days)
= 946 kgs

(d) Minimum Stock Level = Recorder Level – (Average consumption Rate × Average Procurement Time)
= 450 kgs – (40 kgs X 7 days)

= 170 kgs

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

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

= 558 kgs

(f) Number of Orders to be placed per year

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

= $\frac{14600 \text{ kg}}{646 \text{ kgs}}$

= 22.60 Orders or 23 Orders

(g) Total Inventory Cost

Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 100)	=	₹14,60,000
Total Ordering Cost (No. of Orders x O) (23 Orders x 200)	=	₹ 4,600
Total Carrying Cost (EOQ / 2 x C) (646 kgs / 2 x ₹ 14	=	₹ 4,522
Total Inventory Cost	=	₹ 14,69,122

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

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

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

(i) Counter-offer:

Let Discount Rate = z%

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

Revised Carrying Cost = [(₹ 100 – z) x 1% x 12 months] + ₹ 2 = ₹ 12 -0.12z + ₹ 2
= ₹ 14 – 0.12z

Total Inventory Cost at Counter-Offer Price

Cost of Materials (A x Purchase Price) [14600 kgs x (₹ 100 – z)]	= ₹ 14,60,000 – 14,600z
Total Ordering Cost (No. of Orders x O) (2 Orders x 200)	= ₹ 400
Total Carrying Cost (EOQ / 2 x C) [7300 kgs / 2 x (₹ 14 – 0.12z)]	= ₹ 51,100 – 438z
Total Inventory Cost	=₹ 15,11,500 – 15038z
₹ 14,69,122	= ₹ 15,11,500 – 15038z

Or 15038z = 42,378

Or z = 2.82

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

Q.4 Calculate Material Cost | MTP May 22(1)

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:

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(or Demurage)	₹ 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.

Ans. **Computation of Total cost of material purchased of SKY Manufacturing Company**

Particulars	Units	(Amount in ₹)
Listed Price of Materials	5,000	7,50,000
Less: Trade discount @ 10% on invoice price		(75,000)
		6,75,000
Add: CGST @ 6% of ₹ 6,75,000		40,500
SGST @ 6% of ₹ 6,75,000		40,500
		7,56,000
Add: Road Tax paid		15,000
Freight and Insurance		51,000
Commission and Brokerage Paid		30,000
Add: Cost of returnable containers:		
Amount deposited ₹ 90,000		
Less: Amount refunded ₹ 60,000		30,000
		8,82,000
Add: Other Expenses @ 2% of Total Cost $\left(\frac{8,82,000}{98} x 2\right)$		18,000
Total cost of material		9,00,000
Less: Shortage due to Normal Loss @ 20%	1,000	-
Total cost of material of good units	**4,000**	**9,00,000**
Cost per unit (₹ 9,00,000/4,000 units)		**225**

Notes:
1. GST is payable on net price i.e., listed price less discount.
2. Detention charges/ fines imposed for non-compliance of rule or law by any statutory authority It is an abnormal cost and not included with cost of purchase.
3. Shortage due to normal reasons should not be deducted from cost to ascertain total cost of good units.

Q.5 Economic Order Qty (EOQ) | MTP Nov 19

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. 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):

(i) If purchase order for the both materials is placed separately.

(ii) If purchase order for the both materials is not placed separately.

Ans.

Workings:

Annual production of Product X = Annual demand – Opening stock
= 5,00,000 – 12,000 = 4,88,000 units

Annual requirement for raw materials = Annual production× Material per unit – Opening stock of material

Material A = 4,88,000 × 4 units – 24,000 units = 19,28,000 units

Material B = 4,88,000 × 16 units – 52,000 units = 77,56,000 units

(i) Computation of EOQ when purchase order for the both materials is placed separately

$$EOQ = \sqrt{\frac{2 \times \text{Annual Requirement for material} \times \text{Ordering cost}}{\text{Carrying cost per unit per annum}}}$$

$$\text{Material A} = \sqrt{\frac{2 \times 19,28,000 \text{ units}}{\text{Rs.15,000}}} = \sqrt{\frac{38,56,000 \times \text{Rs.15,000}}{\text{Rs.19.5}}}$$

13%of Rs.150
= 54,462 units

$$\text{Material B} = \sqrt{\frac{2 \times 19,28,000 \text{ units}}{\text{Rs.15,000}}} = \sqrt{\frac{1,55,12,000 \times \text{Rs.15,000}}{\text{Rs.26}}}$$

13%of Rs.200
= 94,600 units

(ii) Computation of EOQ when purchase order for the both materials is not placed separately

$$\text{Material A \& B} = \sqrt{\frac{2 \times (19,28,000 + 77,56,000) \text{ units} \times \text{Rs.15,000}}{13\% \text{ of Rs.190 } *}}$$

$$= \sqrt{\frac{1,93,68,000 \times \text{Rs.15,000}}{\text{Rs.24.7}}} = 1,08,452 \text{ units}$$

$$\text{Material A} = \frac{1,08,452 \times 19,28,000}{96,84,000} = 21,592 \text{ units}$$

$$\text{Material A} = \frac{1,08,452 \times 77,56,000}{96,84,000} = 86,860 \text{ units}$$

$$* \frac{(\text{Rs.150} \times 19,28,000) + (\text{Rs.200} \times 77,56,000)}{(19,28,000 + 77,56,000)} = \text{Rs.190}$$

Q.6 Economic Order Qty (EOQ) | RTP Nov 19

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. 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:

(i) CALCULATE cost per kg. of material X and Y

(ii) CALCULATE the Economic Order quantity for both the materials.

Ans.

Working Notes:

Annual purchase quantity for material X and Y:

Annual demand for product M- 20,000 units × 4 = 80,000 units

Particulars	Mat-X	Mat-Y
Quantity required for per unit of product M	3 kg.	4 kg.
Net quantity for materials required	2,40,000 kg.	3,20,000 kg.
Add: Loss in transit	-	6,881 kg.
Add: Loss in process	10,000 kg.	17,204 kg.
Purchase quantity	**2,50,000 kg.**	**3,44,085 kg.**

Note - Input credit on GST paid is available; hence, it will not be included in cost of material.

(i) **Calculation of cost per kg. of material X and Y:**

Particulars	Mat-X	Mat-Y
Purchase quantity	2,50,000 kg.	3,44,085 kg.
Rate per kg.	₹140	₹640
Purchase price	₹3,50,00,000	₹22,02,14,400
Add: Freight	0	₹9,80,000*
Total cost	₹3,50,00,000	₹22,11,94,400
Net Quantity	2,40,000 kg.	3,20,000 kg
Cost per kg.	₹145.83	₹691.23

*No. of trucks = $\frac{3,44,085 kg.}{10 \text{ ton}' 1,000}$ = 34.40 trucks or 35 trucks

Therefore, total freight = 35 trucks × ₹28,000 = ₹9,80,000

(ii) **Calculation of Economic Order Quantity (EOQ) for Mat.-X and Y:**

$$EOQ = \sqrt{\frac{2 \times \text{Annual Requirement} \times \text{Order cost}}{\text{Carrying cost per unit p.a.}}}$$

Particulars	Mat-X	Mat-Y
Annual Requirement	2,50,000 kg.	3,44,085 kg.
Ordering cost	0	₹28,000
Cost per unit	₹145.83	₹691.23
Carrying cost	15%	15%
Carrying cost per unit p.a.	0*	₹103.68
EOQ	0	13,632.62 kg.

Q.7 EOQ / Frequently Order | RTP May 23

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.

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?

Ans.

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

Annual requirement (usage) of raw material in kg. (A) = $\frac{1,50,000 \text{units}}{3 \text{unitsperkg}}$ = 50,000kg.

Ordering Cost (Handling & freight cost) (O) = ₹1,470 + ₹770 = ₹2,240
Carrying cost per unit per annum (C) i.e. inventory carrying cost + working capital cost= (₹3 × 12 months) + ₹20 = ₹56 per kg.

E.O.Q = $\sqrt{\frac{2AC}{C}} = \sqrt{\frac{2 \times 50,000 \text{ kg.} \times ` 2,240}{` 56}}$ 2,000 kg

(ii) Frequency of placing orders for procurement :
Annual consumption (A) = 50,000 kg.
Quantity per order (E.O.Q) = 2,000 kg.

No. of orders per annum = $\frac{A}{E.O.Q} = \frac{50,000 \text{kg}}{2,000 \text{kg.}}$ = 25 orders

Frequency of placing orders (in days) = $\frac{360 \text{days}}{25 \text{orders}}$ = 14.4 Days

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

Particulars	On Quarterly Basis	On E.O.Q Basis
1. Annual Usage (in Kg.)	50,000 kg.	50,000 kg.
2. Size of the order	12,500 kg.	2,000 kg.
3. No. of orders (1 ÷ 2)	4	25
4. Cost of placing ordersor Ordering cost (No. of orders × Costper order)	₹8,960 (4 order × ₹2,240)	₹56,000 (25 orders × ₹2,240)
5. Inventory carryingcost (Average inventory ×Carrying cost per unit)	₹3,50,000 (12,500 kg. × ½ × ₹56)	₹56,000 (2,000 kg. × ½ × ₹56)
6. Total Cost (4 + 5)	₹3,58,960	₹1,12,000

When order is placed on quarterly basis the ordering cost and carrying cost increased by ₹2,46,960 (₹3,58,960 - ₹1,12,000). So, discount required = ₹ 2,46,960
Total annual purchase = 50,000 kg. × ₹190 = ₹95,00,000
So, Percentage of discount to be negotiated $= \frac{₹\ 2,46,960}{₹\ 95,00,000} \times 100 = 2.60\%$

Q.8 EOQ / Max. Stock Level | MTP Nov 22(1)

A company produces a product 'AB' by using two raw materials - 'Material Ae' and 'Material Be' in the ratio of 5:3.
A sales volume of 50,000 kgs is estimated for the month of December by the managers expecting the trend will continue for entire year. The ratio of input and output is 8:5.
Other Information about Raw Material Ae is as follows:

Purchase Price	₹ 150 per kg
Re-order period	2 to 3 days
Carrying Cost	12%

Note: Material Ae is perishable in nature and if not used within 3.5 days of purchase it becomes obsolete.
To place an order for material 'Ae', the company has to incur an administrative cost of ₹ 375 per order. At present, material 'Ae' is purchased in a lot of 7,500 kgs. to avail the discount on purchase. Company works for 25 days in a month and production is carried out evenly. Calculate (i) EOQ and (ii) Maximum Stock Level

Ans.

(i) Monthly production of AB = 50,000 kgs
Raw material required = 50,000/5 x 8 = 80,000 kgs
Material Ae and Material Be ratio = 5:3
Therefore, material Ae = 80,000/8 x 5 =50,000 kgs

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

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

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

(a) Stock equals to 3.5 days consumption = 50,000 kgs/ 25 days x 3.5 days = 7,000 kgs
(b) Maximum stock level for Material Ae
Maximum stock= Reorder quantity + reorder level – (minimum consumption x minimum lead time)
Where, reorder quantity = 7,500 kgs
Reorder level = maximum consumption* x maximum lead time
= 50,000/ 25 x 3 days = 6,000 kgs
Now, Maximum stock level = 7,500 kgs + 6,000 kgs – (50,000 /25 days x 2 days) = 9,500 kgs
Stock required for 3.5 days consumption is lower than the maximum stock level calculated above. Therefore, maximum stock level will be 7,000 kgs.
(*since production is processed evenly throughout the month hence material consumption will also be even.)

Q.9 EOQ / Next Order be placed | RTP May 18

Aditya Brothers 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. Aditya Brothers 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

Ans.

(i) Calculation of Economic Order Quantity:

$$EOQ = \sqrt{\frac{2xAxO}{Ci}} = \sqrt{\frac{2' (60{,}000 \text{ packs}' 12 \text{ months}) 240}{` 228' 10\%}}$$

= 3,893.3 packs or 3,893 packs.

(ii) Number of orders per year

$$\frac{\text{Annual requirements}}{\text{E.O.Q}} = \frac{7{,}20{,}000 \text{ packs}}{3{,}893 \text{ packs}} = 184.9 \text{ or } 185 \text{ orders a year}$$

(iii) Ordering and storage costs

	(₹)
Ordering costs :- 185 orders □ ₹ 240	44,400.00
Storage cost :- ½ (3,893 packs □ 10% of ₹228)	44,380.20
Total cost of ordering & storage	88,780.20

(iv) Timing of next order

(a) Day's requirement served by each order.

$$\text{Number of days requirements} = \frac{\text{No.of working days}}{\text{No.of order in a year}} = \frac{360 \text{ days}}{185 \text{ Orders}} = 1.94 \text{ days}$$

Supply.
This implies that each order of 3,893 packs supplies for requirements of 1.94 days only.

(b) Days requirement covered by inventory

$$= \frac{\text{Units ininventory}}{\text{Economic order quantity}} \text{ x (Day's requirement served by an order)}$$

$$\frac{10{,}033 \text{ packs}}{3{,}893 \text{ packs}} \text{ x } 1.94 \text{ days} = 5 \text{ days requirement}$$

(c) Time interval for placing next order
Inventory left for day's requirement – Average lead time of delivery
5 days – 5 days = 0 days
This means that next order for the replenishment of supplies has to be placed immediately

Q.10

The annual demand for an item of raw material is 4,000 units and the purchase price is expected to be Rs. 90 per unit. The incremental cost of processing an order is Rs. 135 and the annual cost of storage is estimated to be Rs. 12 per unit. COMPUTE the optimal order quantity and total relevant cost of this order quantity?
Suppose that Rs. 135 as estimated to be the incremental cost of processing an order is incorrect and should have been Rs. 80. All other estimates are correct. ESTIMATE the difference in cost on account of this error?

Assume at the commencement of the period that a supplier offers 4,000 units at a price of Rs. 86. The materials will be delivered immediately and placed in the stores. Assume that the incremental cost of placing the order is zero and original estimate of Rs. 135 for placing an order for the economic batch is correct. ANALYSE, should the order be accepted?

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

$$\sqrt{\frac{2x4000x135}{12}} = \sqrt{90,000} = 300 \text{ units}$$

Relevant Cost of this order quantity	Rs.
Ordering cost = $\frac{4,000}{300}$ = 13.33 say 14 orders at Rs. 135	1,890
Carrying Cost = $\frac{1}{2}$ × 300 × 12	1,800
Relevant cost	3,690

(iii) Revised EOQ = $\sqrt{\frac{2x4000x80}{12}}$ = 231 units

Ordering cost = $\frac{4,000}{231}$ = 17.32 say 18 orders at Rs. 80	1,440
Carrying cost = × 231 × 12	1,386
	2,826

Different in cost on account of this error = 3,690 – 2,826 = Rs. 864

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

Original offer at Rs. 90 per unit		Supplier offered at Rs. 86 per unit	
	Rs.		Rs.
Purchase Cost	3,60,000	Purchase cost 4,000 × 86	3,44,000
Ordering cost	1,890	Ordering cost	Nil
Carrying cost	1,800	Carrying cost $\frac{1}{2}$ × 4,000 × 12	24,000
Total cost	3,63,690		3,68,000

This special offer at Rs. 86 per unit should not be accepted as its total cost is higher by Rs. 4,310 (3,68,000 – 3,63,690) as compared to original offer.

Q.11 EOQ / Qty Discount | PY May 18

M/s. X Private Limited is manufacturing a special product which requires a component "SKY BLUE". The following particulars are available for the year ended 31st March, 2018:

Annual demand of "SKY BLUE"	12000 Units
Cost of placing an order	₹ 1,800
Cost per unit of "SKY BLUE	₹ 640
Carrying cost per annum	18.75%

The company has been offered a quantity discount of 5 on the purchases of "SKY BLUE" provided the order size is 3000 components at a time.

You are required to:
(i) Compute the Economic Order Quantity.
(ii) Advise whether the quantity discount offer can be accepted

Ans. (i) Calculation of Economic Order Quantity

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 12{,}000 \text{ units} \times 1{,}800}{640 \times 18.75 / 10}} = 600 \text{ units}$$

(ii) Evaluation of Profitability of Different Options of Order Quantity
When EOQ is ordered

		(₹)
Purchase Cost	(12,000 units x ₹ 640)	76,80,000
Ordering Cost	$\left[\frac{A}{Q} xQ - (12{,}000 \text{ units} / 600 \text{ units}) \times 1{,}800\right]$	36,000
Carrying Cost	$\left[\frac{Q}{2} xCxi - 600 \text{ units} \times 640 \times 1/2 \times 18.75/100)\right]$	36,000
Total Cost		77,52,000

Q.12 EOQ / Reorder Level | PY Nov 20

An automobile company purchases 27,000 spare parts for its annual requirements. The cost per order is ₹ 240 and the annual carrying cost of average inventory is 12.5%. Each spare part costs ₹ 50. At present, the order size is 3,000 spare parts. (Assume that number of days in a year = 360 days)

Find out:
(i) How much the company's cost would be saved by opting EOQ model?
(ii) The Re-order point under EOQ model if lead time is 12 days.
(iii) How frequently should orders for procurement be placed under EOQ model?

Ans. **Working Notes:**

Annual requirement (A)	= 27,000 units
Cost per order (O)	= ₹ 240
Inventory carrying cost (i)	= 12.5%
Cost per unit of spare (c)	= ₹ 50
Carrying cost per unit (i × c)	= ₹ 50 × 12.5% = ₹ 6.25
Economic Order Quantity (EOQ)	$= \sqrt{\frac{2xAxO}{ixc}}$
$= \sqrt{\frac{2 \times 27{,}000 \times 240}{6.25}}$	= 1440 units

(i) **Calculation of saving by opting EOQ:**

	Existing Order policy	EOQ Model
No. of orders	9 $\left(\frac{27{,}000}{3{,}000}\right)$	**18.75 or 19** $\left(\frac{27{,}000}{1,\ 440}\right)$
A. Ordering Cost (₹)	**2,160** (₹ 240 × 9)	**4,500**

		$\left\{240x\left(\frac{27,000}{1,440}\right)\right\}$
B. Carrying cost (₹)	**9,375** $\left(\frac{3,000x6.25}{2}\right)$	**4,500** $\left(\frac{1,440 \times 6.25}{2}\right)$
Total cost (A+B) (₹)	**11,535**	**9,000**

Savings of Cost by opting EOQ Model = ₹ 11,535 – ₹ 9,000 = ₹ 2,535

(ii) Re-order point under EOQ:

Re-order point/ Re-order level = Maximum consumption × Maximum lead time

Consumption per day = 27,000units $= \frac{27,000units}{360days}$ = **75 units**

Re-order point/ Re-order level = 75 units × 12 days = **900 units**

(iii) Frequency of Orders (in days):

$= \frac{360days}{No.of\ ordersayear} = \frac{360days}{19}$ = 18.95 days or 19 days

Q.13 EOQ / Reorder Level | PY Nov 22

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

You are required to determine:

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

(ii) The re-order point.

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

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Ans.

(i) Calculation of Economic Order Quantity

Annual requirement (A) = 7500×12= 90,000 Valves Cost per order (O) = ₹ 15

Inventory carrying cost (i) = 20% Cost per unit of spare (c)= ₹ 1.5

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

Economic Order Quantity (EOQ) $= \sqrt{\frac{2xAxO}{ixc}}$

$= \sqrt{\frac{2x90,000x15}{0.3}}$ = 3,000 Valves

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

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

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

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

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

Carrying cost is 20% of ₹ 4.50 = ₹ 0.90

Economic Order Quantity (EOQ) $= \sqrt{\frac{2xAxO}{ixc}}$

$= \sqrt{\frac{2x90,000x15}{0.9}}$

= 1732.0508 units or 1733 Valves

Q.14 EOQ / Reorder Level | RTP Nov 18

Rounak Ltd. is the manufacturer of monitors for PCs. A monitor requires 4 units of Part-M. The following are the details of its operation during 20X8:

Average monthly market demand	2,000 Monitors
Ordering cost	₹ 1,000 per order
Inventory carrying cost	20% per annum
Cost of Part	₹ 350 per part
Normal usage	425 parts per week
Minimum usage	140 parts per week
Maximum usage	710 parts per week
Lead time to supply	3-5 weeks

COMPUTE from the above:

(i) Economic Order Quantity (EOQ). If the supplier is willing to supply quarterly 30,000 units of Part-M at a discount of 5%, is it worth accepting?

(ii) Reorder level

(iii) Maximum level of stock

(iv) Minimum level of stock.

Ans.

(1) A = Annual usage of parts = Monthly demand for monitors × 4 parts × 12 months

= 2,000monitors × 4 parts × 12 months = 96,000units O = Ordering cost per order = ₹ 1,000/- per order

C1 = Cost per part =₹ 350/-

iC1 = Inventory carrying cost per unit per annum

= 20% × ₹ 350 = ₹ 70/- per unit, per annum Economic order quantity (EOQ):

$$E.O.Q = \sqrt{\frac{2Ao}{ic1}} = \sqrt{\frac{2,96,000 \text{ units } 1,000}{70}} = 1,656 \text{ parts (approx.)}$$

The supplier is willing to supply 30,000 units at a discount of 5%, therefore cost of each part shall be ₹350 – 5% of 350 = ₹332.5

Total cost (when order size is 30,000 units):

= Cost of 96,000 units + Ordering cost + Carrying cost.

$$= (96,000 \text{ units} \times ₹ 332.50) + \left(\frac{96,000 \text{units}}{30,000 \text{ units}} x1,000\right) + \frac{1}{2} \text{ (30,000 units} \times 20\% \times ₹ 332.50)$$

= ₹3,19,20,000 + ₹3,200* + ₹9,97,500= ₹3,29,20,700

Total cost (when order size is 1,656 units):

$$= (96,000 \text{ units} \times ₹350) + \left(\frac{96,000 \text{units}}{1656 \text{units}} x1,000\right) \frac{1}{2} \text{ (1,656 units} \times 20\% \times ₹350)$$

= ₹3,36,00,000 + ₹57,970* + ₹57,960 = ₹3,37,15,930

Since, the total cost under the supply of 30,000 units with 5% discount is lower than that when order size is 1,656 units, therefore the offer should be accepted.

Note: While accepting this offer consideration of capital blocked on order size of 30,000 units has been ignored. *Order size can also be taken in absolute figure.

(2) Reorder level

= Maximum consumption × Maximum re-order period

= 710 units × 5 weeks = 3,550 units

(3) Maximum level of stock

= Re-order level + Reorder quantity – (Min. usage × Min. reorder period)

= 3,550 units + 1,656 units – (140 units × 3 weeks) = 4,786 units.

(4) Minimum level of stock

= Re-order level – Normal usage × Average reorder period

= 3,550 units – (425 units × 4 weeks) = 1,850 units.

Q.15 EOQ / Reorder Level | RTP May 19

Ananya Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will able to sale 10,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

(i) The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).
(ii) Maximum consumption per day is 20 kg. more than the average consumption per day.
(iii) There is an opening stock of 1,000 kg.
(iv) Time required to get the raw materials from the suppliers is 4 to 8 days.
(v) The purchase price is ₹125 per kg.

There is an opening stock of 900 units of the finished product Exe. The rate of interest charged by bank on Cash Credit facility is 13.76%.

To place an order company has to incur ₹ 720 on paper and documentation work. From the above information FIND OUT the followings in relation to raw material Dee:

(a) Re-order Quantity
(b) Maximum Stock level
(c) Minimum Stock level
(d) CALCULATE the impact on the profitability of the company by not ordering the EOQ.

[Take 364 days for a year]

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

Sales forecast of the product 'Exe'	10,000 units
Less: Opening stock of 'Exe'	900 units
Fresh units of 'Exe' to be produced	9,100 units

Raw material required to produce 9,100 units of 'Exe' (9,100 units × 2 kg.)	18,200 kg.
Less: Opening Stock of 'Dee'	1,000 kg.
Annual demand for raw material 'Dee'	17,200 kg.

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

$$EOQ = \sqrt{\frac{2 \times Annual\ demand\ of\ 'Dee' \times Ordering\ cost}{Carrying\ cost\ per\ unit\ per\ annum}}$$

$$= \sqrt{\frac{2 \times 17,200kg \times ₹720}{₹125 \times 13.76\%}} = \sqrt{\frac{2 \times 17,200kg \times ₹720}{₹17.2}} = 1,200\ kg$$

(iii) Re- Order level:

= (Maximum consumption per day × Maximum lead time)

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

$$\left\{\left(\frac{18,200kg}{364 days} + 20kg\right) \times 8 days\right\} = 560kg$$

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

Average Consumption per day = 50 Kg.
Hence, Maximum Consumption per day = 50 kg. + 20 kg. = 70 kg.
So Minimum consumption per day will be

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

Or, 50 kg. $= \frac{\text{Min.consumption} + 70kg}{2}$

Or, Min. consumption = 100 kg – 70 kg. = 30 kg.

(a) Re-order Quantity :

EOQ – 200 kg. = 1,200 kg. – 200 kg. = 1,000 kg.

(b) Maximum Stock level:

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

= 560 kg. + 1,000 kg. – (30 kg. × 4 days)

= 1,560 kg. – 120 kg. = 1,440 kg.

(c) Minimum Stock level:

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

= 560 kg. – (50 kg. × 6 days) = 260 kg.

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

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,000 kg.	1,200 kg.
II	No. of orders a year	$\frac{17,200kg.}{1,000kg.}$ = 17.2or18orders	$\frac{17,200kg.}{1,200kg.}$ = 14.33or15orders
III	Ordering Cost	18 orders × ₹ 720 = ₹12,960	15 orders × ₹ 720 = ₹10,800
IV	Average Inventory	$\frac{1,000kg.}{2}$ = 500kg.	$\frac{1,200kg.}{2}$ = 600kg.
V	Carrying Cost	500 kg. × ₹ 17.2 = ₹ 8,600	600 kg. × ₹ 17.2 = ₹ 10,320
VI	Total Cost	₹ 21,560	₹ 21,120

Extra Cost incurred due to not ordering EOQ = ₹ 21,560 - ₹ 21,120 = ₹440

Q.16 Material Turnover | PY Dec 21

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

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

(i) You are required to calculate:

(a) The inventory turnover ratio of 'Material A' and 'Material B'.

(b) The number of days for which the average inventory is held for both materials 'A' and 'B'.

(ii) Based on above calculations, give your comments. (Assume 360 days in a year.)

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

	Material A (₹)	Material B (₹)
Opening stock	30,000	32,000
Add: Purchases	90,000	51,000
	1,20,000	83,000
Less: Closing stock	20,000	14,000

Materials consumed	1,00,000	69,000
Average inventory: (Opening Stock + Closing Stock) x 2	25,000	23,000
(a) Inventory Turnover ratio: (Consumption x Average inventory)	4 times	3 times
(b) Number of days for which the average inventory held (Number of Days in a year/IT ratio)	90 days	120 days

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

Q.17 Max & Min Consumption | RTP Nov 23

Following details are related to a manufacturing concern:

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

Calculate:

(i) Maximum consumption per day
(ii) Minimum consumption per day

Ans.

Difference between Minimum lead time Maximum lead time = 4 days
Max. lead time – Min. lead time = 4 days
Or, Max. lead time = Min. lead time + 4 days (i)
Average lead time is given as 6 days i.e.

$$= \frac{\text{Max.lead time+Min.lead time}}{2} = 6days = 6 \text{ days} \quad \text{(ii)}$$

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

$$= \frac{\text{Max.lead time+4 days} + \text{Min.lead time}}{2} = 6days$$

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

Or, 2 Min. lead time $= \frac{8days}{2} = 4days$

Putting this Minimum lead time value in (i), we get
Maximum lead time = 4 days + 4 days = 8 days

(i) Maximum consumption per day:

Re-order level = Max. Re-order period × Maximum Consumption per day
1,60,000 units = 8 days × Maximum Consumption per day

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

(ii) Minimum Consumption per day:

Maximum Stock Level = Re-order level + Re-order Quantity – (Min. lead time × Min. Consumption per day)
Or, 1,90,000 units = 1,60,000 units + 90,000 units – (4 days × Min. Consumption per day)
Or, 4 days × Min. Consumption per day = 2,50,000 units – 1,90,000 units

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

Q.18 Min, Max, Avg Stock / Reorder | RTP Nov 20

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

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

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

(i) Minimum Stock of A?
(ii) Maximum Stock of B?
(iii) Re-order level of C?
(iii) Average stock level of A?
(iv) Re-order level of D?
(v) Minimum Stock level of D?

Ans.

(i) Minimum stock of A

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

(ii) Maximum stock of B

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

(iii) Re-order level of C

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

OR

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

(iv) Average stock level of A

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

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

Working note

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

(v) Re-order level of D

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

(vi) Minimum stock of D

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

Q.19 Min, Max, Avg Stock / Reorder | RTP May 20

Arnav Electronics manufactures electronic home appliances. It follows weighted average Cost method for inventory valuation. Following are the data of component X:

Date	Particulars	Units	Rate per unit(₹)
15-12-19	Purchase Order- 008	10,000	9,930
30-12-19	Purchase Order- 009	10,000	9,780
01-01-20	Opening stock	3,500	9,810
05-01-20	GRN*-008 (against the Purchase Order- 008)	10,000	-
05-01-20	MRN**-003 (against the Purchase Order- 008)	500	-
06-01-20	Material Requisition-011	3,000	-
07-01-20	Purchase Order- 010	10,000	9,750
10-01-20	Material Requisition-012	4,500	-
12-01-20	GRN-009 (against the Purchase Order- 009)	10,000	-
12-01-20	MRN-004 (against the Purchase Order- 009)	400	-
15-01-20	Material Requisition-013	2,200	-
24-01-20	Material Requisition-014	1,500	-
25-01-20	GRN-010 (against the Purchase Order- 010)	10,000	-
28-01-20	Material Requisition-015	4,000	-
31-01-20	Material Requisition-016	3,200	-

*GRN- Goods Received Note; **MRN- Material Returned Note

Based on the above data, you are required to CALCULATE:

(i) Re-order level
(ii) Maximum stock level
(iii) Minimum stock level
(iv) PREPARE Store Ledger for the period January 2020 and DETERMINE the value of stock as on 31-01-2020.
(v) Value of components used during the month of January, 2020.
(vi) Inventory turnover ratio.

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Ans.

Workings:

Consumption is calculated on the basis of material requisitions:

Maximum component usage = 4,500 units (Material requisition on 10-01-20)

Minimum component usage = 1,500 units (Material requisition on 24 -01-20)

Lead time is calculated from purchase order date to material received date

Maximum lead time = 21 days (15-12-2019 to 05-01-2020)

Minimum lead time = 14 days (30-12-2019 to 12-01-2020)

Calculations:

(i) Re-order level
= Maximum usage × Maximum lead time
= 4,500 units × 21 days = 94,500 units

(ii) Maximum stock level
= Re-order level + Re-order Quantity – (Min. Usage × Min. lead time)
= 94,500 units + 10,000 units – (1,500 units × 14 days)
= 1,04,500 units – 21,000 units = 83,500 units

(iii) Minimum stock level
= Re-order level – (Avg. consumption × Avg. lead time)
= 94,500 units – (3,000 units × 17.5 days)
= 94,500 units – 52,500 units
= 42,000 units

(i) Store Ledger for the month of January 2020:

Date	Receipts				Issue				Balance		
	GRN/ MRN	Units	Rate ₹	Amt. (₹ '000)	MRN/ MR	Units	Rate ₹	Amt. (₹ '000)	Units	Rate ₹	Amt. (₹ '000)
01-01-20	-	-	-	-	-	-	-	-	3,500	9,810	34,335
05-01-20	008	10,000	9,930	99,300	003	500	9,930	4,965	13,000	9,898	1,28,670
06-01-20	-	-	-	-	011	3,000	9,898	29,694	10,000	9,898	98,980
10-01-20	-	-	-	-	012	4,500	9,898	44,541	5,500	9,898	54,439
12-01-20	009	10,000	9,780	97,800	004	400	9,780	3,912	15,100	9,823	1,48,327
15-01-20	-	-	-	-	013	2,200	9,823	21,611	12,900	9,823	1,26,716
24-01-20	-	-	-	-	014	1,500	9,823	14,734	11,400	9,823	1,11,982
25-01-20	010	10,000	9,750	97,500	-	-	-	-	21,400	9,789	2,09,482
28-01-20	-	-	-	-	015	4,000	9,789	39,156	17,400	9,789	1,70,326
31-01-20	-	-	-	-	016	3,200	9,789	31,325	14,200	9,789	1,39,001

[Note: Decimal figures may be rounded-off to the nearest rupee value wherever required)

Value of stock as on 31 01-2020 ('000) = ₹1,39,001

(v) Value of components used during the month of January 2020:

Sum of material requisitions 011 to 016 ('000)

= ₹ 29,694 + ₹ 44,541 + ₹ 21,611 + ₹ 14,734 + ₹ 39,156 + ₹ 31,325 = ₹ 1,81,061

(vi) Inventory Turnover Ratio

$$= \frac{\text{Value of materialsused}}{\text{Averagestock value}} = \frac{1,81,061}{(1,39,001 + 34,335) / 2} = \frac{`1,81,061}{86,668} = 2.09$$

Q.20 Total Cost / EOQ / Reorder | MTP Dec 21(2)

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

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

You are REQUIRED to:

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

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

(iii) State the number of orders which the company should place to minimize the costs after taking EOQ also into consideration.

Ans. **Working notes**

1. Annual production = 40,000 units
2. Raw material required for 40,000 units (40,000 units × 1 kg.) = 40,000 kg.
3. EOQ $= \sqrt{\frac{2 \times 40,000 \text{ kgs.} \times `1,000}{20}} = 20,000 kgs$

4. Total cost of procurement and storage when the order size is equal to EOQ or 2,000 kg.

No. of orders (40,000 kg. ÷ 2,000 kg.	= 20 times
Ordering cost (20 orders × ₹1,000)	= ₹ 20,000
Carrying cost (₹) ($\frac{1}{2}$ × 2,000 kg. × ₹ 20)	= ₹ 20,000
Total cost	₹ 40,000

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

$$= 1{,}000 \text{ kg.} + \frac{40{,}000 \text{ kg.}}{360 \text{days}} x 360 days$$

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

(ii) Statement showing the total cost of procurement and storage of raw materials (after considering the discount)

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

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

Q.21 Stores Ledger | PY May 19

The following are the details of receipt and issue of material 'CXE' in a manufacturing Co. during the month of April 2019:

Date	Particulars	Quantity (kg)	Rate per kg
April 4	Purchase	3,000	₹ 16
April8	Issue	1,000	
April15	Purchase	1,500	₹ 18
April 20	Issue	1,200	
April 25	Return to supplier out of purchase made on April 15	300	
April 26	Issue	1,000	
April 28	Purchase	500	₹ 17

Opening stock as on 01-04-2019 is 1,000 kg @ ₹ 15 per kg.

On 30th April, 2019 it was found that 50 kg of material 'CXE' was fraudulently misappropriated by the store assistant and never recovered by the Company.

Required:

(i) Prepare a store ledger account under each of the following method of pricing the issue:
- (a) Weighted Average Method
- (b) LIFO

(ii) What would be the value of material consumed and value of closing stock as on 30-04-2019 as per these two methods?

Ans. (i) (a) Stores Ledger Account for the month of April, 2019 (Weighted Average Method)

	Receipt			Issue			Balance		
Date	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)
1-4-19	_	_	_	_	_	_	1,000	15.00	15,000
4-4-19	3,000	16.00	48,000	_	_	_	4,000	15.75	63,000
8-4-19	_	_	_	1,000	15.75	15,750	3,000	15.75	47,250
15-4-19	1,500	18.00	27,000	_	_	_	4,500	16.50	74,250
20-4-19	_	_	_	1,200	16.50	19,800	3,300	16.50	54,450
25-4-19	_	_	_	300	18.00	5,400	3,000	16.35	49,050
26-4-19	_	_	_	1,000	16.35	16,350	2,000	16.35	32,700
28-4-19	500	17.00	8,500	_	_	_	2,500	16.48	41,200
30-4-19	_	_	_	50	16.48	824	2,450	16.48	40,376

(b) Stores Ledger Account for the month of April, 2019 (LIFO)

	Receipt			Issue			Balance		
Date	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)	Qty Units	Rate (₹)	Amount (₹)
1-4-19	_	_	_	_	_	_	1,000	15	15,000
4-4-19	3,000	16	48,000	_	_	_	1,000	15	15,000
							3,000	16	48,000
8-4-19	_	_	_	1,000	16	16,000	1,000	15	15,000
							2,000	16	32,000
15-4-19	1,500	18	27,000	_	_	_	1,000	15	15,000
							2,000	16	32,000
							1,500	18	27,000
20-4-19	_	_	_	1,200	18	21,600	1,000	15	15,000
							2,000	16	32,000
							300	18	5,400
25-4-19	_	_	_	300	18	5,400	1,000	15	15,000
							2,000	16	32,000
26-4-19	_	_	_	1,000	16	16,000	1,000	15	15,000
							1,000	16	16,000
28-4-19	500	17	8,500	_	_	_	1,000	15	15,000
							1,000	16	16,000
							500	17	8,500
30-4-19	_	_	_	50	17	850	1,000	15	15,000
							1,000	16	16,000
							450	17	7,650

(ii) Value of Material Consumed and Closing Stock

	Weighted Average method (₹)	LIFO method (₹)

Opening stock as on 01-04-2019	15,000	15,000
Add: Purchases	83,500	83,500
	98,500	98,500
Less: Return to supplier	5,400	5,400
Less: Abnormal loss	824	850
Less: Closing Stock as on 30-04-2019	**40,376**	**38,650**
Value of Material Consumed	**51,900**	**53,600**

Q.22 Stores Ledger | PY May 23

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

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

Quantity of raw material per unit of product: 4 kg.
Opening stock of raw material on 1stJanuary: 6,020 kg. (Cost ₹ 63, 210)
Closing stock of raw material on 30thApril: 5,100 kg.
All the purchases of material are made at the start of each month.

Required:

(i) Calculate the consumption of raw materials (in kgs) month-by- month and in total.
(ii) Calculate the month-wise quantity and value of raw materials purchased.
(iii) Prepare the priced stores ledger for each month using the FIFO method.

Ans.

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

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

Calculation of Raw Material Purchased

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

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

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

(iii) Store Price Ledger by using FIFO method.

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

Q.23 Stores Ledger | MTP Nov22(2)

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

Receipts:

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

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

Issues:

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

June 15	1,500
June 21	1,200

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

The stock verifier of the company reported a shortage of 80 kgs. on 31st May, 20 22 and 60 kgs. on 30th June, 2022.

Ans.

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

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

Q.24 EOQ | ICAI MAT

(a) EXE Limited has received an offer of quantity discounts on its order of materials as under:

Price per ton (₹)	Ton (Nos.)
1,200	Less than 500
1,180	500 and less than 1,000
1,160	1,000 and less than 2,000
1,140	2,000 and less than 3,000
1,120	3,000 and above.

The annual requirement for the material is 5,000 tons. The ordering cost per order is ₹ 1,200 and the stock holding cost is estimated at 20% of material cost per annum. You are required to COMPUTE the most economical purchase level.

(a) WHAT will be your answer to the above question if there are no discounts offered and the price per ton is ₹ 1,500?

Ans. **(a)**

Total annual requirement (A)	Order size (Tonne)(q)	No. of orders A/q	Cost of inventory A × Per tonne cost (₹)	Ordering cost A/q × ₹ 1200 (₹)	Carrying cost p.t. p.a 1/2× q × 20% of cost p.t. (₹)	Total Cost (4+5+6) (₹)
1	2	3	4	5	6	7
5,000 Ton	400	12.5 (13)*	60,00,000 (5,000x₹1200)	15,600	48,000 (200 x ₹ 240)	60,63,600
	500	10	59,00,000 (5,000 x ₹ 1180)	12,000	59,000 (250 x ₹ 236)	59,71000
	1,000	5	58,00,000 (5,000x ₹ 1160)	6,000	1,16,000 (500 x ₹ 232)	59,22,000
	2,000	2.5 (3)*	57,00,000 (5,000x₹ 1140)	3,600	2,28,000 (1,000x₹228)	59,31,600
	3,000	1.666 (2)*	56,00,000 (5,000x₹ 1120)	2,400	3,36,000 (1,500x₹224)	59,38,400

* Since number of orders cannot be in decimals, thus 12.5 orders are taken as 13 orders, 2.5 are taken as 3 order and 1.66 orders are taken as 2 orders.

The above table shows that the total cost of 5,000 units including ordering and carrying cost is minimum (₹ 59,22,000) when the order size is 1,000 units. Hence the most economical purchase level is 1,000 units.

(b) If there will are no discount offer then the purchase quantity should be equal to EOQ. The EOQ is as follows:

$$EOQ = \sqrt{\frac{2Ao}{c}}$$

where A = annual inventory requirement,
O = ordering cost per order and
C = carrying cost per unit per annum

$$\sqrt{\frac{2 \times 5{,}000 \text{ units} \times 1{,}200}{20\% \times 1{,}500}} = 200 \text{ units}$$

Q.25 Stores Ledger | ICAI MAT

'AT' Ltd. furnishes the following store transactions for September, 2022:

1-9-22	Opening balance	25 units value ₹ 162.50
4-9- 22	Issues Req. No. 85	8 units
6-9- 22	Receipts from B & Co. GRN No. 26	50 units @ ₹ 5.75 per unit
7-9- 22	Issues Req. No. 97	12 units
10-9- 22	Return to B & Co.	10 units
12-9- 22	Issues Req. No. 108	15 units
13-9- 22	Issues Req. No. 110	20 units
15-9- 22	Receipts from M & Co. GRN. No. 33	25 units @ ₹ 6.10 per unit
17-9- 22	Issues Req. No. 121	10 units
19-9- 22	Received replacement from B & Co. GRN No. 38	10 units
20-9- 22	Returned from department, material of M & Co. MRR No. 4	5 units
22-9- 22	Transfer from Job 182 to Job 187 in the dept. MTR 6	5 units
26-9- 22	Issues Req. No. 146	10 units
29-9- 22	Transfer from Dept. "A" to Dept. "B" MTR 10	5 units
30-9- 22	Shortage in stock taking	2 units

PREPARE the priced stores ledger on FIFO method and STATE how would you treat the shortage in stock taking.

Ans. **Working Notes:**

1. The material received as replacement from vendor is treated as fresh supply.
2. In the absence of any information, the price of the material returned from a user department on 20-9-22 has been taken at the price of the latest issue made on 17-9-22. In FIFO method, physical flow of the material is irrelevant, and issue price is based on first in first out.
3. The issue of material on 26-9-22 is made out of the material received from a user department on 20-9-22.
4. The entries for transfer of materials from one job and department to another on 22-9-22 and 29-9-22 respectively, do not affect the store ledger. However, adjustment entries to calculation of cost of respective jobs and departments are made in cost accounts.
5. The material found short as a result of stock taking has been written off at relevant issue price.

Stores Ledger of AT Ltd. for the month of September, 2022 (FIFO Method)

	RECEIPT				ISSUE				BALANCE		
Date	GRN No MRR No.	Qty. Units	Rate (₹)	Amount (₹)	Requisition No	Qty. Units	Rate (₹)	Amount (₹)	Qty. Units	Rate (₹)	Amount (₹)
1	2	3	4	5	6	7	8	9	10	11	12
1-9-22	—	—	—	—	—	—	—	—	25	6.50	162.50
4-9-22	—	—	—	—	85	8	6.50	52	17	6.50	110.50
6-9-22	26	50	5.75	287.50	—	—	—	—	17 50	6.50 5.75	398.00
7-9-22	—	—	—	—	97	12	6.50	78	5 50	6.50 5.75	320.00
10-9-22	—	—	—	—	*Return*	10	5.75	57.50		6.50	262.50

									40	5.75	
12-9-22	—	—	—	—	108	5 10	6.50 5.75	90	30	5.75	172.50
13-9-22	—	—	—	—	110	20	5.75	115	10	5.75	57.50
15-9-22	33	25	6.10	152.50	—	—	—	—	10 25	5.75 6.10	210.00
17-9-22	—	—	—	—	121	10	5.75	57.50	25	6.10	152.50
19-9-22	38	10	5.75	57.50	—	—	—	—	25 10	6.10 5.75	210.00
20-9-22	4	5	5.75	28.75	—	—	—	—	5 25 10	5.75 6.10 5.75	238.75
26-9-22	—	—	—	—	146	5 5	5.75 6.10	59.25	20 10	6.10 5.75	179.50
30-9-22	—	—	—	—	Shortage	2	6.10	12.20	18 10	6.10 5.75	167.30

Q.26 RTP May 25

Catalist Ltd. is a distributor of industrial chemicals, providing the chemical in drum packaging.

Each drum of the chemical costs ₹ 200 from a supplier and the company sells it for ₹ 240.

Annual demand is estimated to be for 2,50,000 drums.

The cost of delivery is estimated at ₹ 100 per order and the annual variable holding cost per drum at ₹ 180 plus 10% of purchase cost.

Based on above data, the managing director calculates the economic order quantity and suggests that it should serve as the foundation for purchasing decisions in upcoming periods.

However, the purchasing manager states that the managing director has ignored his share of bonus of 10% of the amount by which total annual inventory holding and order costs (before such remuneration) are below ₹ 2,00,000. He further points out that the suppliers also offer quantity discounts on purchase orders, i.e. if the order size is 1,000 drums or above, the price per drum is only ₹ 199.60, compared to ₹ 200 when an order is between 500 and 999 drums.

You are required to:

(i) CALCULATE the economic order quantity as calculated by the company's managing director.

(ii) COMMENT whether Catalist Ltd. can look forward to the quantity discount offered for purchasing 1,000 drums, after CALCULATING total cost considering purchasing manager's bonus along with supplier quantity discounts.

Ans.

(i) Economic order quantity (EOQ) as calculated by the company's managing director

$$EOQ = \sqrt{\frac{2AO}{C}}$$

where A = annual inventory requirement,

O = ordering cost per order and

C = carrying cost per unit per annum

$$= \sqrt{\frac{2 \times 2,50,000 \text{ drums} \times ₹ 100}{[₹ 180 + (10\% \text{ of } ₹ 200)]}}$$

= 500 units

(ii) Comparison of total cost considering purchasing manager's bonus and supplier quantity discounts

Particulars		At EOQ of 500 units (₹)	If considered quantity discount at 1000 units (₹)
Ordering Cost	[(2,50,000 units/500 units) × ₹ 100]	50,000	
	[(2,50,000 units/1000 units) × ₹ 100]		25,000
Carrying Cost	{500 units/ 2 x [(₹ 180 + (10% of ₹ 200)]}	50,000	
	{1,000 units/ 2 x [(₹ 180 + (10% of ₹ 199.60)]}		99,980
		1,00,000	1,24,980
Purchasing manager's bonus	10% of (₹ 2,00,000 - ₹ 1,00,000)	10,000	
	10% of (₹ 2,00,000 - ₹ 1,24,980)		7,502
Annual	2,50,000 units x ₹ 200	5,00,00,000	
inventory cost	2,50,000 units x ₹ 199.60		4,99,00,000
Total Cost		**5,01,10,000**	**5,00,32,482**

In above comparison, the potential savings from purchasing in bulk outweigh the higher carrying costs associated with holding more inventory. Thus, Catalist Ltd. may look forward to the quantity discount offered at 1,000 units.

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