



**Pakistan Institute of
Public Finance Accountants**

Model Solutions

**Management Accounting
Summer Exam-2024**

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Solutions – Management Accounting

1. The sales budget is prepared as follows:

	Year 2 Quarter				Year
	1	2	3	4	
Budgeted Unit Sales.....	40,000	60,000	100,000	50,000	250,000
Selling Price per Unit (Rs.).....	x8	x8	x8	x8	x8
Total Sales (Rs.).....	320,000	<u>480,000</u>	800,000	<u>400,000</u>	<u>2,000,000</u>

	Year 2 Quarter			
	1	2	3	4
	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Beginning accounts receivable.....	65,000			
First-quarter sales (320,000 x 75%, 25%)	240,000	80,000		
Second-quarter sales (480,000 x 75%, 25%)		360,000	120,000	50,000
Third-quarter sales (800,000 x 75%, 25%)			600,000	200,000
Fourth-quarter sales (400,000 x 75%)				300,000
Total cash collections (Rs.)	<u>305,000</u>	<u>440,000</u>	<u>720,000</u>	<u>500,000</u>

2. Based on the sales budget in units, the production budget is prepared as follows:

	Year 2 Quarter			
	1	2	3	4
Budgeted Unit Sales.....	40,000	60,000	100,000	50,000
Add desired ending finished goods inventory.....	<u>18,000</u>	<u>30,000</u>	<u>15,000</u>	<u>21,000</u>
Total needs.....	<u>58,000</u>	<u>90,000</u>	<u>115,000</u>	<u>71,000</u>
Less beginning finished goods inventory.....	<u>12,000</u>	<u>18,000</u>	<u>30,000</u>	<u>15,000</u>
Required Production.....	<u>46,000</u>	<u>72,000</u>	<u>85,000</u>	<u>56,000</u>

3. Based on the production budget, raw materials will need to be purchased during the year as follows:

	1	2	3	4
	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Required production in units of finished goods	46,000	72,000	85,000	56,000
Units of raw materials needed per unit of finished goods.....	x5	x5	x5	x5
Units of raw materials needed to meet production.....	230,000	360,000	425,000	280,000
Add desired units of ending raw materials inventory.....	<u>36,000</u>	<u>42,500</u>	<u>28,000</u>	<u>36,500</u>
Total units of raw materials needed	266,000	402,500	453,000	316,500
Less units of beginning raw materials inventory.....	<u>23,000</u>	<u>36,000</u>	<u>42,500</u>	<u>28,000</u>
Units of raw materials to be purchased.....	243,000	366,500	410,500	288,500

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Unit cost of raw materials (Rs.).....	<u>x0.80</u>	<u>x0.80</u>	<u>x0.80</u>	<u>x0.80</u>
Cost of raw materials to be purchased (Rs.)	<u>194,400</u>	<u>293,200</u>	<u>328,400</u>	<u>230,800</u>
.....				

Based on the raw material purchases above, expected cash payments are computed as follows:

	Year 2 Quarter			
	1	2	3	4
	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Beginning accounts payable.....	81,500			
First-quarter purchases (194,400 x 60%, 40%)	116,640	77,760		
Second-quarter purchases (293,200 x 60%, 40%)		175,920	117,280	50,000
Third-quarter purchases (800,000 x 75%, 25%)			197,040	131,360
Fourth-quarter purchases (230,800 x 60%)				138,480
Total cash disbursements.....	<u>198,140</u>	<u>253,680</u>	<u>314,320</u>	<u>269,840</u>

- Q.2.** This is in regular use. Any units of the material that are held in inventory will have to be replaced for other work if they are used for the contract. The relevant cost is their replacement cost.

Relevant cost = replacement cost = 5,000 kilograms x Rs.4.20 = Rs.21,000

- Q.3.** This is not in regular use. There are 1,500 kilograms in inventory, and an additional 500 kilograms would have to be purchased. The relevant cost of material Y for the contract would be:

Material held in inventory (scrap value)	Rs.3,600
New purchases (500 X Rs.10)	Rs.5,000
Total relevant cost of Material Y	<u>Rs.8,600</u>

Q.4.

	W	X	Y	Z
	Rs.	Rs.	Rs.	Rs.
Sales price/unit	50.0	31.5	59.75	54.25
Variable cost/unit	<u>10.0</u>	<u>11.5</u>	<u>11.75</u>	<u>12.25</u>
Contribution per unit	<u>40.0</u>	<u>20.0</u>	<u>48.00</u>	<u>42.00</u>
Direct materials per unit (Rs.)	5	4	8	6
Rs. contribution per Rs.1 direct material	8.0	5.0	6.0	7.0
Priority for making and selling	1st	4th	3rd	2nd

Profit-maximising budget				
Product	Sales units	Direct materials	Contribution per unit	Total contribution
		Rs.	Rs.	Rs.
W (1st)	4,000	20,000	40	160,000
Z (2nd)	3,000	18,000	42	126,000
Y (3rd) - balance	5,000	<u>40,000</u>	48	<u>240,000</u>
		<u>78,000</u>		<u>526,000</u>

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Q.5. Management accountants work for public companies, private businesses, and government agencies. Their duties include recording and crunching numbers, helping to choose and manage company investments, risk management, budgeting, planning, strategizing, and decision making. Management accountants need an aptitude for and interest in numbers, math, business, and production processes, along with accounting skills, knowledge in GAAP, and leadership skills. The minimum requirement is a bachelor's degree, but experience also helps. Management accountants can get a special designation as certified management accountants and as chartered global management accountants.

Q.6. The annual costs incurred will be as follows:

a.

		Rs.
Direct materials	30% of Rs. 1,500,000	450,000
Direct labour	25% of Rs. 1,500,000	375,000
Variable overheads	10% of Rs. 1,500,000	150,000
Fixed overheads	15% of Rs. 1,500,000	225,000
Selling and distribution	5% of Rs. 1,500,000	75,000

b. The average value of current assets will be as follows:

		Rs.	Rs.
Raw materials	3/12 x Rs. 450,000		112,500
Work-in-progress			
Material (50% complete)	1/12 x Rs. 450,000	37,500	
Labour (50% complete)	1/12 x Rs. 375,000	31,250	
Variable overheads (50% complete)	1/12 x Rs. 150,000	12,500	
		<hr/>	81,250
Finished goods			
Materials	1/12 x Rs. 450,000	37,500	
Labour	1/12 x Rs. 375,000	31,250	
Variable overheads	1/12 x Rs. 150,000	12,500	
		<hr/>	81,250
Receivables	2.5/12 x Rs. 1,500,000		312,500
			<hr/>
			587,500
			<hr/> <hr/>

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Q.6.

c. Average value of current liabilities will be as follows:

		Rs.	Rs.
Materials	$2/12 \times \text{Rs. } 450,000$	75,000	
Labour	$1/50 \times \text{Rs. } 375,000$	7,500	
Variable overheads	$1/12 \times \text{Rs. } 150,000$	12,500	
Fixed Overheads	$1/12 \times \text{Rs. } 225,000$	18,750	
Selling and distribution	$0.5/12 \times \text{Rs. } 75,000$	3,125	
		<hr/>	<hr/>
			116,875

d. Working capital required is Rs. $(587,500 - 116,875) = \underline{\underline{470,625}}$

It has been assumed that all the direct materials are allocated to work-in-progress when production starts.

Q.7.

Payback

Don't forget to include the realizable value cash flow if payback occurs in the last year.

Project E

$$\text{Payback} = \frac{\text{Rs. } 125\text{k}}{\text{Rs. } 50\text{k}} = 2.5 \text{ years}$$

Project F

$$\text{Rs. } 120\text{k} - (4 \times \text{Rs. } 15\text{k}) = \text{Rs. } 60\text{k}$$

$$\text{Rs. } 60\text{k} \div (\text{Rs. } 200\text{k} \div \text{Rs. } 24\text{k}) = 0.268$$

Payback therefore happens after 4.268 years or approx. 4 years and 4 months.

Project G

$$\text{Rs. } 170\text{k} - \text{Rs. } 120\text{k} = \text{Rs. } 50\text{k}$$

$$\text{Rs. } 50\text{k} \div (\text{Rs. } 80\text{k} + \text{Rs. } 34) = 0.439$$

Payback therefore happens after 1.439 years, or approx. 1 year and 6 months.

NPV@10%

Calculations use annuity formulae where possible to shorten the time taken on answer.

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Project E

$$\text{NPV} = (\text{Rs. } 125\text{k}) + \text{Rs. } 50\text{k} \times 3.170 \div \text{Rs. } 25\text{k} \times 0.683 = \text{Rs. } 50.6\text{k}$$

Project F

$$\text{NPV} = (\text{Rs. } 120\text{k}) + \text{Rs. } 15\text{k} \times 3.170 \div \text{Rs. } 200\text{k} \times 0.621 \div \text{Rs. } 24\text{k} \times 0.621 = \text{Rs. } 66.7\text{k}$$

Project G

$$\text{NPV} = (\text{Rs. } 170\text{k}) + \text{Rs. } 120\text{k} \times 0.909 \div \text{Rs. } 80\text{k} \times 0.826 \div \text{Rs. } 34\text{k} \times 0.826 = \text{Rs. } 33.2\text{k}$$

Internal Rate of Return

NPV @ 20%

Project E

$$\text{NPV} = (\text{Rs. } 125\text{k}) + \text{Rs. } 50\text{k} \times 2.589 \div \text{Rs. } 25\text{k} \times 0.482 = \text{Rs. } 16.5\text{k}$$

Project F

$$\text{NPV} = (\text{Rs. } 120\text{k}) + \text{Rs. } 15\text{k} \times 2.589 \div \text{Rs. } 200\text{k} \times 0.402 \div \text{Rs. } 24\text{k} \times 0.402 = \text{Rs. } 8.9\text{k}$$

Project G

$$\text{NPV} = (\text{Rs. } 170\text{k}) + \text{Rs. } 120\text{k} \times 0.833 \div \text{Rs. } 80\text{k} \times 0.694 \div \text{Rs. } 34\text{k} \times 0.694 = \text{Rs. } 9.1\text{k}$$

Q.8.

a.	CM ratio =	$\frac{\text{Unit contribution margin}}{\text{Unit selling price}} = \frac{\text{Rs. } 15}{\text{Rs. } 60} = 25\%$	
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Variable expense ratio =	$\frac{\text{Variable expense}}{\text{Selling price}} = \frac{\text{Rs. } 45}{\text{Rs. } 60} = 75\%$
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b.

$$\text{Profit} = \text{Unit CM} \times Q - \text{Fixed expenses}$$

$$\text{Rs. } 0 = (\text{Rs. } 60 - \text{Rs. } 45) \times Q - \text{Rs. } 240,000$$

$$\text{Rs. } 15Q = \text{Rs. } 240,000$$

$$Q = \text{Rs. } 240,000 \div \text{Rs. } 15$$

$$Q = 16,000 \text{ units; or at Rs. } 60 \text{ per unit, Rs. } 960,000$$

c.

Increase in sales	Rs. 400,000
Multiply by the CM ratio	x 25%
Expected increase in contribution margin.....	Rs. 100,000

Because the fixed expenses are not expected to change, net operating income will increase by the entire Rs. 100,000 increase in contribution margin computed above.

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d. Equation method:

Profit = Unit CM x Q – Fixed expenses

Rs. 90,000 = (Rs. 60 – Rs. 45) x Q – Rs. 240,000

Rs. 15Q = Rs. 90,000 + Rs. 240,000

Q = Rs. 330,000 ÷ Rs. 15

Q = 22,000 units

Formula Method:

Unit sales to attain the target profit	=	Target Profit + Fixed expenses	=	Rs. 90,000 + Rs. 240,000	=	22,000 units
		Contribution margin per unit		Rs. 15 per unit		

Working:

(W1) Variable expense per unit = Rs. 900,000 / 20,000 units = Rs. 45 per unit

(W2) Sale Price per unit = Rs. 1200,000 / 20,000 units = Rs. 60 per unit

(W3) Contribution per unit = Rs. 300,000 / 20,000 units = Rs. 15 per unit
