

MOCK TEST PAPER
INTERMEDIATE (IPC): GROUP – I
PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT
Suggested Answers/ Hints

1. (a) (i) **Estimated Net Realisable Value Method:**

	Buttermilk Amount (₹)	Butter Amount (₹)
Sales Value	8,40,000 (₹30 × 28 × 1000)	76,80,000 (₹480 × 16 × 1000)
Less: Post split-off cost (Further processing cost)	-	(1,20,000)
Net Realisable Value	8,40,000	75,60,000
Apportionment of Joint Cost of ₹ 51,00,000* in ratio of 1:9	5,10,000	45,90,000

* [(₹ 100 × 50 × 1000) + ₹ 1,00,000] = ₹ 51,00,000

(ii) Incremental revenue from further processing of Butter into Ghee

(₹480 × 16 × 1000 - ₹ 360 × 20 × 1000)	₹4,80,000
Less : Incremental cost of further processing of Butter into Ghee	<u>₹1,20,000</u>
Incremental operating income from further processing	<u>₹3,60,000</u>

The operating income of 'Buttery Butter' will be reduced by ₹3,60,000 in February if it sells 20 tonne of Butter to 'Healthy Bones', instead of further processing of Butter into Ghee for sale. Thus, 'Buttery Butter' is advised not to accept the offer and further process butter to make Ghee itself.

(b) (i) **Calculation of Economic Order Quantity**

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 9,680 \text{ units} \times \text{Rs.} 200}{\text{Rs.} 400 \times 20\%}} = 220 \text{ units}$$

(ii) **Evaluation of Profitability of Different Options of Order Quantity**

(A) When EOQ is ordered

		(₹)
Purchase Cost	(9,680 units × ₹ 400)	38,72,000
Ordering Cost	[(9,680 units/220 units) × ₹ 200]	8,800
Carrying Cost	(220 units × ½ × ₹400 × 20%)	8,800
Total Cost		38,89,600

(B) When Quantity Discount is accepted

		(₹)
Purchase Cost	(9,680 units × ₹380)	36,78,400
Ordering Cost	[(9,680 units/4,840 units) × ₹200]	400
Carrying Cost	(4,840 units × ½ × ₹380 × 20%)	1,83,920
Total Cost		38,62,720

Advise – The total cost of inventory is lower if quantity discount is accepted. The company would save ₹26,880 (₹38,89,600 - ₹38,62,720).

(c) Working notes:

(i) Current assets and Current liabilities computation:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{2.5}{1}$$

$$\text{Or, } \frac{\text{Current Assets}}{2.5} = \frac{\text{Current Liabilities}}{1} = k \text{ (say)}$$

$$\text{Or, Current Assets} = 2.5 k \text{ and Current Liabilities} = k$$

$$\text{Or, Working capital} = (\text{Current Assets} - \text{Current Liabilities})$$

$$\text{Or, ₹ 2,40,000} = k (2.5 - 1) = 1.5 k$$

$$\text{Or, } k = ₹1,60,000$$

$$\therefore \text{Current Liabilities} = ₹ 1,60,000$$

$$\text{Current Assets} = ₹1,60,000 \times 2.5 = ₹ 4,00,000$$

(ii) Computation of stock

$$\text{Liquid ratio} = \frac{\text{Liquid assets}}{\text{Current liabilities}}$$

$$\text{Or, } 1.5 = \frac{\text{Current Assets} - \text{Stock}}{\text{Rs.1,60,000}}$$

$$\text{Or, } 1.5 \times ₹1,60,000 = ₹4,00,000 - \text{Stock}$$

$$\text{Or, Stock} = ₹1,60,000$$

(iii) Computation of Proprietary fund; Fixed assets; Capital and Sundry creditors

$$\text{Proprietary ratio} = \frac{\text{Fixed assets}}{\text{Proprietary fund}} = 0.75$$

$$\therefore \text{Fixed assets} = 0.75 \text{ Proprietary fund}$$

$$\text{and Net working capital} = 0.25 \text{ Proprietary fund}$$

$$\text{Or, } ₹ 2,40,000/0.25 = \text{Proprietary fund}$$

$$\text{Or, Proprietary fund} = ₹9,60,000$$

$$\text{and Fixed assets} = 0.75 \text{ proprietary fund}$$

$$= 0.75 \times ₹ 9,60,000$$

$$= ₹7,20,000$$

$$\text{Capital} = \text{Proprietary fund} - \text{Reserves \& Surplus}$$

$$= ₹9,60,000 - ₹1,60,000$$

$$= ₹8,00,000$$

$$\text{Sundry creditors} = (\text{Current liabilities} - \text{Bank overdraft})$$

$$= (₹1,60,000 - ₹40,000) = ₹1,20,000$$

Balance Sheet

Liabilities	(₹)	Assets	(₹)
Capital	8,00,000	Fixed assets	7,20,000
Reserves & Surplus	1,60,000	Stock	1,60,000
Bank overdraft	40,000	Current assets	2,40,000
Sundry creditors	1,20,000		
	11,20,000		11,20,000

(d) Equated Monthly Installment (EMI) = $P \times r \times \frac{(1+r)^n}{(1+r)^n - 1}$

Where, P = ₹3,00,000

r = 0.18/12 = 0.015

n = 1 × 12 = 12

$$\text{EMI} = ₹3,00,000 \times 0.015 \times \frac{(1+0.015)^{12}}{(1+0.015)^{12} - 1} = ₹4,500 \times \frac{1.1956}{0.1956} = ₹27,504$$

Calculation of Total Interest to be paid upto the end of sixth month

End of month	Opening Balance (₹)	Payment (₹)	Interest (₹)	Principle Repayment (₹)	Outstanding at the end (₹)
	A	B = EMI	C = A × 0.015	D = B - C	E = A - D
1	3,00,000	27,504	4,500	23,004	2,76,996
2	2,76,996	27,504	4,155	23,349	2,53,647
3	2,53,647	27,504	3,805	23,699	2,29,948
4	2,29,948	27,504	3,449	24,055	2,05,893
5	2,05,893	27,504	3,088	24,416	1,81,477
6	1,81,477	27,504	2,722	24,782	1,56,695
			21,719		

Total interest upto the end of sixth month will be ₹ 21,719

2. (a) (i) **Computation of pre-determined overhead rate for each production department from budgeted data**

	Production Department		Service Department	
	P ₁	P ₂	S ₁	S ₂
Budgeted factory overheads for the year (₹)	27,51,000	24,50,000	8,00,000	6,00,000
Allocation of service department S ₁ 's costs to production departments P ₁ and P ₂ equally (₹)	4,00,000	4,00,000	(8,00,000)	--
Allocation of service department S ₂ 's costs to production departments P ₁ and P ₂ in the ratio of 2:1 (₹)	4,00,000	2,00,000	--	(6,00,000)
Total	35,51,000	30,50,000	--	--

Budgeted machine hours in department P ₁ (working note-1)	1,05,000	--		
Budgeted labour hours in department P ₂ (working note-1)	--	1,75,000		
Budgeted machine/ labour hour rate (₹)	33.82	17.43		

(ii) **Performance report for Jan, 2020**

(When 4,000 and 3,000 units of Products A and B respectively were actually produced)

	Budgeted (₹)	Actual (₹)
Raw materials used in Dept. P₁:		
A : 4,000 units × ₹ 120	4,80,000	4,89,000
B : 3,000 units × ₹ 150	4,50,000	4,56,000
Direct labour cost (on the basis of labour hours worked in department P ₂)		
A : 4,000 units × 2 hrs. × ₹ 72	5,76,000	5,91,900
B : 3,000 units × 2.5 hrs. × ₹ 75	5,62,500	5,52,000
Overhead absorbed on machine hour basis in Dept. P₁:		
A : 4,000 units × 1.5 hrs. × ₹ 33.82	2,02,920	1,96,420*
B : 3,000 units × 1 hr. × ₹ 33.82	1,01,460	1,33,630*
Overhead absorbed on labour hour basis in Dept. P₂:		
A : 4,000 units × 2 hrs. × ₹ 17.43	1,39,440	1,49,814**
B : 3,000 units × 2.5 hrs. × ₹ 17.43	1,30,725	1,35,198**
	26,43,045	27,03,962

* (Refer to working note 4)

** (Refer to working note 5)

Working notes:

1.

	Product A	Product B	Total
Budgeted output (units)	50,000	30,000	
Budgeted machine hours in Dept. P ₁	75,000 (50,000×1.5 hrs.)	30,000 (30,000×1 hr.)	1,05,000
Budgeted labour hours in Dept. P ₂	1,00,000 (50,000×2 hrs.)	75,000 (30,000×2.5 hrs.)	1,75,000

2.

	Product A	Product B	Total
Actual output (units)	4,000	3,000	
Actual machine hours utilized in Dept. P ₁	6,100	4,150	10,250
Actual labour hours utilised in Dept. P ₂	8,200	7,400	15,600

3. Computation of actual overhead rates for each production department from actual data

	Production Department		Service Department	
	P ₁	P ₂	S ₁	S ₂
Actual factory overheads for the month of Jan, 2020 (₹)	2,50,000	2,25,000	80,000	60,000
Allocation of service Dept. S ₁ 's costs to production Dept. P ₁ and P ₂ equally (₹)	40,000	40,000	(80,000)	—
Allocation of service Dept. S ₂ 's costs to production Dept. P ₁ and P ₂ in the ratio of 2:1 (₹)	40,000	20,000	—	(60,000)
Total	3,30,000	2,85,000	--	--
Actual machine hours in Dept. P ₁ (working note 2)	10,250	--		
Actual labour hours in Dept. P ₂ (working note 2)	--	15,600		
Actual machine/ labour hour rate (₹)	32.20	18.27		

4. Actual overheads absorbed (based on machine hours)

A : 6,100 hrs × ₹ 32.20 = ₹ 1,96,420

B : 4,150 hrs × ₹ 32.20 = ₹ 1,33,630

5. Actual overheads absorbed (based on labour hours)

A : 8,200 hrs × ₹ 18.27 = ₹ 1,49,814

B : 7,400 hrs × ₹ 18.27 = ₹ 1,35,198

(b) (i) Estimate of the Requirement of Working Capital

	(₹)	(₹)
A. Current Assets:		
Raw material stock (Refer to Working note 3)	6,64,615	
Work in progress stock (Refer to Working note 2)	5,00,000	
Finished goods stock (Refer to Working note 4)	13,60,000	
Debtors (Refer to Working note 5)	29,53,846	
Cash and Bank balance	<u>25,000</u>	55,03,461
B. Current Liabilities:		
Creditors for raw materials (Refer to Working note 6)	7,15,740	
Creditors for wages (Refer to Working note 7)	<u>91,731</u>	8,07,471
Net Working Capital (A - B)		<u>46,95,990</u>

Working Notes:**1. Annual cost of production**

	₹
Raw material requirements (1,04,000 units × ₹ 80)	83,20,000
Direct wages (1,04,000 units × ₹ 30)	31,20,000
Overheads (exclusive of depreciation)(1,04,000 × ₹ 60)	<u>62,40,000</u>
	<u>1,76,80,000</u>

2. Work in progress stock

	₹
Raw material requirements (4,000 units × ₹ 80)	3,20,000
Direct wages (50% × 4,000 units × ₹ 30)	60,000
Overheads (50% × 4,000 units × ₹ 60)	<u>1,20,000</u>
	<u>5,00,000</u>

3. Raw material stock

It is given that raw material in stock is average 4 weeks consumption. Since, the company is newly formed, the raw material requirement for production and work in progress will be issued and consumed during the year.

Hence, the raw material consumption for the year (52 weeks) is as follows:

	₹
For Finished goods	83,20,000
For Work in progress	<u>3,20,000</u>
	<u>86,40,000</u>
Raw material stock	$\frac{₹ 86,40,000}{52 \text{ weeks}} \times 4 \text{ weeks i.e. ₹ 6,64,615}$

4. Finished goods stock

8,000 units @ ₹ 170 per unit = ₹ 13,60,000

5. Debtors for sale

Credit allowed to debtors	Average 8 weeks
Credit sales for year (52 weeks) i.e. (1,04,000 units - 8,000 units)	96,000 units
Selling price per unit	₹ 200
Credit sales for the year (96,000 units × ₹ 200)	₹ 1,92,00,000
Debtors	$\frac{₹ 1,92,00,000}{52 \text{ weeks}} \times 8 \text{ weeks i.e. ₹ 29,53,846}$

(Debtor can also be calculated based on Cost of goods sold)

6. Creditors for raw material:

Credit allowed by suppliers	Average 4 weeks
Purchases during the year (52 weeks) i.e. (₹ 83,20,000 + ₹ 3,20,000 + ₹ 6,64,615)	₹ 93,04,615
(Refer to Working notes 1,2 and 3 above)	

Creditors $\frac{₹ 93,04,615}{52 \text{ weeks}} \times 4 \text{ weeks i.e. ₹ 7,15,740}$

7. Creditors for wages

Lag in payment of wages

Average $1\frac{1}{2}$ weeks

Direct wages for the year (52 weeks) i.e. ₹ 31,80,000
(₹ 31,20,000 + ₹ 60,000)

(Refer to Working notes 1 and 2 above)

Creditors $\frac{₹ 31,80,000}{52 \text{ weeks}} \times 1\frac{1}{2} \text{ weeks i.e. ₹ 91,731}$

3. (a) (i) Statement of Equivalent Production

Particulars	Input Units	Particulars	Output Units	Equivalent Production			
				Sugarcane		Labour & O.H.	
				%	Units	%	Units
Opening WIP	4,500	Completed and transferred to Process-II	39,500	100	39,500	100	39,500
Units introduced	1,00,000	Normal Loss (55%* of 1,00,000)	55,000	--	--	--	--
		Abnormal loss	1,000	100	1,000	80	800
		Closing WIP	9,000	100	9,000	80	7,200
	1,04,500		1,04,500		49,500		47,500

* 100 kg of sugarcane extracts only 45 litre of juice. Thus, normal loss = $100 - 45 = 55\%$

(ii) Statement showing cost for each element

Particulars	Sugarcane (₹)	Labour (₹)	Overhead (₹)	Total (₹)
Cost of opening work-in-process	50,000	15,000	45,000	1,10,000
Cost incurred during the month	5,00,000	2,00,000	6,00,000	13,00,000
Total cost: (A)	5,50,000	2,15,000	6,45,000	14,10,000
Equivalent units: (B)	49,500	47,500	47,500	
Cost per equivalent unit: (C) = (A ÷ B)	11.111	4.526	13.579	29.216

(iii) Statement of Distribution of cost

	Amount (₹)	Amount (₹)
1. Value of units completed and transferred (39,500 units × ₹ 29.216)		11,54,032
2. Value of Abnormal Loss:		
- Sugarcane (1,000 units × ₹ 11.111)	11,111	
- Labour (800 units × ₹ 4.526)	3,621	
- Overheads (800 units × ₹ 13.579)	10,863	25,595

3. Value of Closing W-I-P:		
- Sugarcane (9,000 units × ₹ 11.111)	99,999	
- Labour (7,200 units × ₹ 4.526)	32,587	
- Overheads (7,200 units × ₹ 13.579)	97,769	2,30,355

(iv) **Process-I A/c**

Particulars	Units	(₹)	Particulars	Units	(₹)
To Opening W.I.P:			By Normal Loss	55,000	--
- Sugarcane	4,500	50,000	By Abnormal loss (₹25,595 + ₹18 (difference due to approximation))	1,000	25,613
- Labour	--	15,000	By Process-II A/c	39,500	11,54,032
- Overheads	--	45,000	By Closing WIP	9,000	2,30,355
To Sugarcane introduced	100,000	5,00,000			
To Direct Labour		2,00,000			
To Overheads		6,00,000			
	104,500	14,10,000		104,500	14,10,000

(b) **Working Notes:**

(1) **Computation of Net Present Values of Projects**

Year	Cash flows		Disct. factor @ 16%	Discounted Cash flow	
	Project A (₹)	Project B (₹)		Project A (₹)	Project B (₹)
	(1)	(2)	(3)	(3) × (1)	(3) × (2)
0	(1,35,000)	(2,40,000)	1.000	(1,35,000)	(2,40,000)
1	--	60,000	0.862	--	51,720
2	30,000	84,000	0.743	22,290	62,412
3	1,32,000	96,000	0.641	84,612	61,536
4	84,000	1,02,000	0.552	46,368	56,304
5	84,000	90,000	0.476	39,984	42,840
Net present value				58,254	34,812

(2) **Computation of Cumulative Present Values of Projects Cash inflows**

Year	Project A		Project B	
	PV of cash inflows (₹)	Cumulative PV (₹)	PV of cash inflows (₹)	Cumulative PV (₹)
1	--	--	51,720	51,720
2	22,290	22,290	62,412	1,14,132
3	84,612	1,06,902	61,536	1,75,668
4	46,368	1,53,270	56,304	2,31,972
5	39,984	1,93,254	42,840	2,74,812

(i) **Discounted payback period:** (Refer to Working note 2)

Cost of Project A = ₹1,35,000

Cost of Project B = ₹ 2,40,000

Cumulative PV of cash inflows of Project A after 4 years = ₹ 1,53,270

Cumulative PV of cash inflows of Project B after 5 years = ₹ 2,74,812

A comparison of projects cost with their cumulative PV clearly shows that the project A's cost will be recovered in less than 4 years and that of project B in less than 5 years. The exact duration of discounted payback period can be computed as follows:

	Project A	Project B
Excess PV of cash inflows over the project cost (₹)	18,270 (₹1,53,270 – ₹ 1,35,000)	34,812 (₹ 2,74,812 – ₹ 2,40,000)
Computation of period required to recover excess amount of cumulative PV over project cost (Refer to Working note 2)	0.39 year (₹ 18,270 ÷ ₹ 46,368)	0.81 years (₹ 34,812 ÷ ₹ 42,840)
Discounted payback period	3.61 year (4 – 0.39) years	4.19 years (5 – 0.81) years

(ii) **Profitability Index:**
$$= \frac{\text{Sum of discounted cash inflows}}{\text{Initian cash outlay}}$$

Profitability Index (for Project A) = $\frac{\text{Rs.1,93,254}}{\text{Rs.1,35,000}} = 1.43$

Profitability Index (for Project B) = $\frac{\text{Rs.2,74,812}}{\text{Rs.2,40,000}} = 1.15$

(iii) **Net present value** (for Project A) = ₹ 58,254 (Refer to Working note 1)

Net present value (for Project B) = ₹ 34,812

4. (a)

	Standard Qty/Hrs.	Standard Rate (₹)	Actual Rate (₹)	Variation in Rate (₹)	Escalation Claim (₹)
	(a)	(b)	(c)	(d) = (c)–(b)	(e) = (a) × (d)
Materials					
A	6,000	50.00	48.00	(–) 2.00	(–) 12,000
B	3,000	80.00	79.00	(–) 1.00	(–) 3,000
C	2,500	60.00	66.00	(+) 6.00	15,000
	Materials escalation claim: (A)				0
X	3,000	70.00	72.00	(+) 2.00	6,000
Y	2,500	75.00	75.00	–	–
Z	3,000	65.00	66.00	(+) 1.00	3,000
	Wages escalation claim: (B)				9,000
	Final claim: (A + B)				9,000

Statement showing final price payable

Agreed price		₹ 18,70,000
Agreed escalation:		
Material cost	--	
Labour cost	₹ 9,000	₹ 9,000
Final price payable		₹ 18,79,000

The claim of ₹ 18,94,100 is based on the total increase in cost. This can be verified as shown below:

Statement showing total increase in cost

	Standard Cost			Actual Cost			Increase/ (Decrease)
	Qty/hrs	Rate (₹)	Amount (₹)	Qty/hrs	Rate (₹)	Amount (₹)	
	(a)	(b)	(c) = (a)×(b)	(d)	(e)	(f) =(d) × (e)	
I. Materials							
A	6,000	50.00	3,00,000	6,050	48.00	2,90,400	
B	3,000	80.00	2,40,000	2,950	79.00	2,33,050	
C	2,500	60.00	1,50,000	2,600	66.00	1,71,600	
			6,90,000			6,95,050	5,050
II. Wages							
X	3,000	70.00	2,10,000	3,100	72.00	2,23,200	
Y	2,500	75.00	1,87,500	2,450	75.00	1,83,750	
Z	3,000	65.00	1,95,000	3,100	66.00	2,04,600	
			5,92,500			6,11,550	19,050
							24,100

Contract price ₹ 18,70,000

Add: Increase in cost ₹ 24,100

The final price claimed by the company ₹ 18,94,100

This claim is not admissible because escalation clause covers only that part of increase in cost, which has been caused by inflation.

Note: It is fundamental principle that the contractee would compensate the contractor for the increase in costs which are caused by factors beyond the control of contractor and not for increase in costs which are caused due to inefficiency or wrong estimation.

(b) Calculation of Earning per share for three alternatives to finance the project

Particulars	Alternatives		
	I	II	III
	To raise debt of ₹ 2,50,000 and equity of ₹ 22,50,000	To raise debt of ₹ 10,00,000 and equity of ₹ 15,00,000	To raise debt of ₹ 15,00,000 and equity of ₹ 10,00,000
	(₹)	(₹)	(₹)
Earnings before interest and tax	5,00,000	5,00,000	5,00,000

Less: Interest on debt at the rate of	25,000 (10% on ₹2,50,000)	1,37,500 (10% on ₹2,50,000) (15% on ₹ 7,50,000)	2,37,500 (10% on ₹ 2,50,000) (15% on ₹7,50,000) (20% on ₹5,00,000)
Earnings before tax	4,75,000	3,62,500	2,62,500
Less: Tax @ 50%	2,37,500	1,81,250	1,31,250
Earnings after tax: (A)	2,37,500	1,81,250	1,31,250
Number of shares: (B) (Equity/ Market price of Share)	15,000 (₹22,50,000/₹150)	10,000 (₹15,00,000/₹150)	8,000 (₹10,00,000/₹125)
Earnings per share: [(A)/ (B)]	15.833	18.125	16.406

The company should raise ₹10,00,000 from debt and ₹15,00,000 by issuing equity shares, as it gives highest EPS.

5. (a) Practical applications of Marginal costing:

- (i) **Pricing Policy:** Since marginal cost per unit is constant from period to period, firm decisions on pricing policy can be taken particularly in short term.
- (ii) **Decision Making:** Marginal costing helps the management in taking a number of business decisions like make or buy, discontinuance of a particular product, replacement of machines, etc.
- (iii) **Ascertaining Realistic Profit:** Under the marginal costing technique, the stock of finished goods and work-in-progress are carried on marginal cost basis and the fixed expenses are written off to profit and loss account as period cost. This shows the true profit of the period.
- (iv) **Determination of production level:** Marginal costing helps in the preparation of break-even analysis which shows the effect of increasing or decreasing production activity on the profitability of the Company.

(b) CVP Analysis Assumptions:

- (i) Changes in the levels of revenues and costs arise only because of changes in the number of products (or service) units produced and sold.
- (ii) Total cost can be separated into two components: Fixed and variable
- (iii) Graphically, the behaviour of total revenues and total cost are linear in relation to output level within a relevant range.
- (iv) Selling price, variable cost per unit and total fixed costs are known and constant.
- (v) All revenues and costs can be added, sub traded and compared without taking into account the time value of money.

- (c) **Trade credit and accruals** as source of working capital refers to credit facility given by suppliers of goods during the normal course of trade. It is a short term source of finance. SSI firms in particular are heavily dependent on this source for financing their working capital needs. The major advantages of trade credit are – easy availability, flexibility and informality.

There can be an argument that trade credit is a cost free source of finance. But it is not. It involves implicit cost. The supplier extending trade credit incurs cost in the form of opportunity cost of funds invested in trade receivables. Generally, the supplier passes on these costs to the buyer by increasing the price of the goods or alternatively by not extending cash discount facility.

- (d) **Bridge finance** refers, normally, to loans taken by the business, usually from commercial banks for a short period, pending disbursement of term loans by financial institutions, normally it takes time for the financial institution to finalise procedures of creation of security, tie-up participation with other institutions etc. even though a positive appraisal of the project has been made. However, once the loans are approved in principle, firms in order not to lose further time in starting their projects arrange for bridge finance. Such temporary loan is normally repaid out of the proceeds of the principal term loans. It is secured by hypothecation of moveable assets, personal guarantees and demand promissory notes. Generally rate of interest on bridge finance is higher as compared with that on term loans.

$$\begin{aligned}
 6. \quad (a) \quad (i) \quad \text{Material Cost Variance (A + B)} &= \{(SQ \times SP) - (AQ \times AP)\} \\
 ₹ 3,625 &= (SQ \times SP) - ₹ 59,825 \\
 (SQ \times SP) &= ₹ 63,450 \\
 (SQ_A \times SP_A) + (SQ_B \times SP_B) &= ₹ 63,450 \\
 (940 \text{ kg} \times SP_A) + (705 \text{ kg} \times ₹ 30) &= ₹ 63,450 \\
 (940 \text{ kg} \times SP_A) + ₹ 21,150 &= ₹ 63,450 \\
 (940 \text{ kg} \times SP_A) &= ₹ 42,300 \\
 SP_A &= \frac{₹ 42,300}{940 \text{ kg}} \\
 \text{Standard Price of Material-A} &= ₹ 45
 \end{aligned}$$

Working Note:

SQ i.e. quantity of inputs to be used to produce actual output

$$= \frac{1,480 \text{ kg}}{90\%} = 1,645 \text{ kg}$$

$$SQ_A = \frac{800 \text{ kg}}{(800 + 600)} \times 1,645 \text{ kg} = 940 \text{ kg}$$

$$SQ_B = \frac{600 \text{ kg}}{(800 + 600)} \times 1,645 \text{ kg} = 705 \text{ kg}$$

$$\begin{aligned}
 (ii) \quad \text{Material Price Variance (A + B)} &= \{(AQ \times SP) - (AQ \times AP)\} \\
 ₹ 175 &= (AQ \times SP) - ₹ 59,825 \\
 (AQ \times SP) &= ₹ 60,000 \\
 (AQ_A \times SP_A) + (AQ_B \times SP_B) &= ₹ 60,000 \\
 (900 \text{ kg} \times ₹ 45 \text{ (from (i) above)}) + (AQ_B \times ₹ 30) &= ₹ 60,000 \\
 ₹ 40,500 + (AQ_B \times ₹ 30) &= ₹ 60,000 \\
 (AQ_B \times ₹ 30) &= ₹ 19,500 \\
 AQ_B &= \frac{19,500}{30} = 650 \text{ kg} \\
 \text{Actual Quantity of Material B} &= 650 \text{ kg.}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii) } (AQ \times AP) &= ₹ 59,825 \\
 (AQ_A \times AP_A) + (AQ_B \times AP_B) &= ₹ 59,825 \\
 (900 \text{ kg} \times AP_A) + (650 \text{ kg (from (ii) above)} \times ₹ 32.5) &= ₹ 59,825 \\
 (900 \text{ kg} \times AP_A) + ₹ 21,125 &= ₹ 59,825 \\
 (900 \text{ kg} \times AP_A) &= ₹ 38,700 \\
 AP_A = \frac{38,700}{900} &= 43
 \end{aligned}$$

Actual Price of Material-A = ₹ 43

$$\begin{aligned}
 \text{(iv) Total Actual Quantity of Material-A and Material-B} \\
 &= AQ_A + AQ_B \\
 &= 900 \text{ kg} + 650 \text{ kg (from (ii) above)} \\
 &= 1,550 \text{ kg}
 \end{aligned}$$

Now,

$$\text{Revised } SQ_A = \frac{800 \text{ kg}}{(800 + 600)} \times 1,550 \text{ kg} = 886 \text{ kg}$$

$$\text{Revised } SQ_B = \frac{600 \text{ kg}}{(800 + 600)} \times 1,550 \text{ kg} = 664 \text{ kg}$$

$$\begin{aligned}
 \text{(v) Material Mix Variance (A + B)} &= \{(RSQ \times SP) - (AQ \times SP)\} \\
 &= \{(RSQ_A \times SP_A) + (RSQ_B \times SP_B) - 60,000\} \\
 &= (886 \text{ kg (from (iv) above)} \times ₹ 45 \text{ (from (i) above)}) \\
 &\quad + (664 \text{ kg (from (iv) above)} \times ₹ 30) - ₹ 60,000 \\
 &= (39,870 + 19,920) - 60,000 = ₹ 210 \text{ (A)}
 \end{aligned}$$

(b) Working Notes:

Company A

$$\text{Financial leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{3}{1} = \text{Or, EBIT} = 3 \times \text{EBT} \quad \dots\dots (1)$$

$$\begin{aligned}
 \text{Again EBIT} - \text{Interest} &= \text{EBT} \\
 \text{Or, EBIT} - 200 &= \text{EBT} \quad \dots\dots(2)
 \end{aligned}$$

Taking (1) and (2) we get

$$\begin{aligned}
 3 \text{ EBT} - 200 &= \text{EBT} \\
 \text{Or, } 2 \text{ EBT} &= 200 \text{ or EBT} = ₹ 100 \\
 \text{Hence EBIT} = 3 \text{ EBT} &= ₹ 300
 \end{aligned}$$

$$\text{Again, we have operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{4}{1}$$

$$\text{EBIT} = ₹ 300, \text{ hence we get}$$

$$\text{Contribution} = 4 \times \text{EBIT} = ₹1,200$$

$$\text{Now variable cost} = 66\frac{2}{3}\% \text{ on sales}$$

$$\text{Contribution} = 100 - 66\frac{2}{3}\% \text{ i.e. } 33\frac{1}{3}\% \text{ on sales}$$

$$\text{Hence sales} = \frac{1200}{33\frac{1}{3}\%} = ₹ 3,600$$

Same way EBIT, EBT, contribution and sales for company B can be worked out.

Company B

$$\text{Financial leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{4}{1} \text{ or } \text{EBIT} = 4 \text{ EBT} \quad \dots\dots(3)$$

$$\text{Again EBIT} - \text{Interest} = \text{EBT} \text{ or } \text{EBIT} - 300 = \text{EBT} \quad \dots\dots (4)$$

$$\text{Taking (3) and (4) we get, } 4 \text{ EBT} - 300 = \text{EBT}$$

$$\text{Or, } 3 \text{ EBT} = 300 \quad \text{Or, } \text{EBT} = 100$$

$$\text{Hence, EBIT} = 4 \times \text{EBT} = 400$$

$$\text{Again, we have operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{5}{1}$$

$$\text{EBIT} = 400; \text{ Hence we get contribution} = 5 \times \text{EBIT} = 2,000$$

$$\text{Now variable cost} = 75\% \text{ on sales}$$

$$\text{Contribution} = 100 - 75\% \text{ i.e. } 25\% \text{ on sales}$$

$$\text{Hence Sales} = \frac{2,000}{25\%} = ₹ 8,000$$

Income Statement

	A (₹)	B (₹)
Sales	3,600	8,000
Less: Variable Cost	2,400	6,000
Contribution	1200	2,000
Less: Fixed Cost (bal. Fig)	900	1,600
EBIT	300	400
Less: Interest	200	300
EBT	100	100
Less: Tax 45%	45	45
EAT	55	55

7. (a) **Effect of overtime payment on productivity:** Overtime work should be resorted to only when it is extremely essential because it involves extra cost. The overtime payment increases the cost of production in the following ways:

1. The overtime premium paid is an extra payment in addition to the normal rate.

2. The efficiency of operators during overtime work may fall and thus output may be less than normal output.
3. In order to earn more the workers may not concentrate on work during normal time and thus the output during normal hours may also fall.
4. Reduced output and increased premium of overtime will bring about an increase in cost of production.

(b) Components of budgetary control system:

The policy of a business for a defined period is represented by the master budget the details of which are given in a number of individual budgets called functional budgets. The functional budgets are broadly grouped under the following heads:

- (a) Physical Budgets – Sales Quantity, Product Quantity., Inventory, Manpower budget.
- (b) Cost Budgets – Manufacturing Cost, Administration Cost, Sales & Distribution cost, R & D Cost.
- (c) Profit Budget

(c) The functions of treasury department management is to ensure proper usage, storage and risk management of liquid funds so as to ensure that the organisation is able to meet its obligations, collect its receivables and also maximize the return on its investments. Towards this end the treasury function may be divided into the following:

- (i) **Cash Management:** The efficient collection and payment of cash both inside the organization and to third parties is the function of treasury department. Treasury normally manages surplus funds in an investment portfolio.
- (ii) **Currency Management:** The treasury department manages the foreign currency risk exposure of the company. It advises on the currency to be used when invoicing overseas sales. It also manages any net exchange exposures in accordance with the company policy.
- (iii) **Fund Management:** Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. It also participates in the decision on capital structure and forecasts future interest and foreign currency rates.
- (iv) **Banking:** Since short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market, therefore, treasury department carries out negotiations with bankers and acts as the initial point of contact with them.
- (v) **Corporate Finance:** Treasury department is involved with both acquisition and disinvestment activities within the group. In addition, it is often responsible for investor relations.

(d) Composition of Return on Equity using the DuPont Model: There are three components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

- (i) **Net Profit Margin:** The net profit margin is simply the after-tax profit a company generates for each rupee of revenue.

$$\text{Net profit margin} = \text{Net Income} \div \text{Revenue}$$

Net profit margin is a safety cushion; the lower the margin, lesser the room for error.

- (ii) **Asset Turnover:** The asset turnover ratio is a measure of how effectively a company converts its assets into sales. It is calculated as follows:

$$\text{Asset Turnover} = \text{Revenue} \div \text{Assets}$$

The asset turnover ratio tends to be inversely related to the net profit margin; i.e., the higher the net profit margin, the lower the asset turnover.

- (iii) **Equity Multiplier:** It is possible for a company with terrible sales and margins to take on excessive debt and artificially increase its return on equity. The equity multiplier, a measure of financial leverage, allows the investor to see what portion of the return on equity is the result of debt. The equity multiplier is calculated as follows:

Equity Multiplier = Assets ÷ Shareholders' Equity.

Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

Return on Equity = Net profit margin × Asset turnover × Equity multiplier

(e) (i) Difference between Scrap and Defectives

Scrap	Defectives
1. It is loss connected with output	1. This type of loss connected with the output but it can be in the input as well.
2. Scraps are not intended but cannot be eliminated due to nature of material or process itself.	2. Defectives also are not intended but can be eliminated through proper control.
3. Generally scraps are not used or rectified.	3. Defectives can be used after rectification.
4. Scraps have insignificant recoverable value.	4. Defectives are sold at lower value from that of good one.

- (ii) **Profit versus Wealth Maximization:** Profit maximisation is a short-term objective and cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise like the term profit is vague, profit maximisation has to be attempted with a realisation of risks involved, it does not take into account the time pattern of returns and as an objective it is too narrow.

Whereas, on the other hand, wealth maximisation, as an objective, means that the company is using its resources in a good manner. If the share value is to stay high, the company has to reduce its costs and use the resources properly. If the company follows the goal of wealth maximisation, it means that the company will promote only those policies that will lead to an efficient allocation of resources.