INTER CA – MAY 2018

Sub: Financial Management & Costing
Topics – Capital Structure, Cost of Capital, Capital Budgeting, Joint & By – Product, Absorption Costing, Overheads.
Test Code – M9
Branch: MULTIPLE Date: 24.12.2017

(50 Marks)

*Note: **All** questions are compulsory.*

Question 1 (8 marks)

Note: Joint Costs are apportioned based on the ratio of sales value at split-off point.
(1/2 mark for each calculation)

Particulars	A	B	C	D	TOTAL
1.Output in liters	8,000 liters	4,000 liters	2,000 liters	4,000 liters	
2.Sales Price per liter at split-off point	Rs. 15.00	Rs.6.00	Rs 3.00	Rs. 7.50	
3.Sal value at split-off point (1*2)	Rs.1,20,000	Rs. 24,000	Rs. 6,000	Rs. 30,000	Rs.1,80,000
4.Joint Cost apportioned in above ratio (120:24:6:30)	Rs.98,667	Rs.19,733	Rs.4,933	Rs.24,667	Rs.1,48,000
5.Proft/(Loss) if all products are sold at spilt-off point (3-4)	**Rs.21,333**	**Rs.4,267**	**Rs.1,067**	**Rs.5,333**	**Rs.32,000**
6.Further Processing Costs(given)	Rs.43,000	Rs.9,000	-	Rs.1,500	Rs.53,500
7.Final sales value(given)	Rs.1,72,000	Rs.25,000	Rs.6,000	Rs.45,000	Rs.2,48,500
8.Profit/(Loss) if all products are sold after further processing(7-4-6)	**Rs.30,833**	**(Rs.3,733)**	**Rs.1,067**	**Rs.18,833**	**Rs.47,000**
9.Additional Revenue from further processing(7-3)	Rs.52,500	Rs.1,000	NA	Rs.15,000	
10.Additional Processing Costs(given)	Rs.43,000	Rs.9,000	-	Rs.1,500	
11. Additional Profit/(Loss) from further processing(9-10)	Rs.9,500	(Rs.8,000)	NA	Rs.13,500	
12.Optimal Decision(based on 11 above)	Process Further	Sell at Split-off	Sell at Split-off	Process Further	
13.Sales Revenue as per Optimal Decision	Rs.1,72,500	Rs.24,000	Rs.6,000	Rs.45,000	Rs.2,47,500
14.Joint Costs as per Point 4 above	Rs.98,667	Rs.19,733	Rs.4,933	Rs.24,667	Rs.1,48,000
15. further processing Costs as per Optimal Decision (i.e. Only For A and D)	Rs.43,000	NIL	NIL	Rs.1,500	Rs.44,500
16. Profit as per Optimal Decision (13-14-15)	**Rs.30,833**	**Rs.4,267**	**Rs.1,067**	**Rs.18,833**	**Rs.55,000**

Alternatively, Profit as per Optimal Decision can also be Computed as under-

Particulars	A	B	C	D	TOTAL
13. Profit / (Loss) if all products are sold at split-off point (as per point 5 above)	Rs.21,333	Rs.4,267	Rs.1,067	Rs.5,333	Rs.32,000
14. Additional profit from further processing (only for A & D) (as per point 11 above)	Rs.9,500	NA	NA	Rs.13,500	Rs.23,000

15. Profit as per Optimal Decision (13 + 14)	**Rs.30,833**	**Rs.4,267**	**Rs.1,067**	**Rs.18,833**	**Rs.55,000**

Question 2 (6 Marks)

Working Notes:

(i) Total Productive hours = Estimated Working hours – Machine Maintenance hours
= 2,200 hours – 200 hours = 2,000 hours

(ii) Depreciation per annum = $\frac{₹\ 10,000 - ₹\ 1,000}{10 \text{ years}} = ₹\ 900$ **3 marks**

(iii) Chemical solution cost per annum = ₹ 20 × 50 weeks = ₹ 1,000

(iv) Wages of attendants (per annum) = $\frac{₹ 120 \times 50 \text{ weeks}}{6 \text{ machines}} = ₹\ 1,000$

Calculation of Machine hour rate

Particulars	Amount (per annum)	Amount (per hour)
A. Standing Charge		
(i) Wages of attendants	1,000	
(ii) Departmental and general works overheads	2,000	
Total Standing Charge	3,000	
Standing Charges per hour $\left(\frac{3,000}{2,000}\right)$		1.5
B. Machine Expense		
(iii) Depreciation	900	0.45
(iv) Electricity $\left(\frac{₹ 0.09 \times 16 \text{ units} \times 1,900 \text{ hours}}{2,000 \text{ hours}}\right)$	-	1.37
(v) Chemical solution	1,000	0.50
(vi) Maintenance cost	1,200	0.60
Machine operating cost per hour (A + B)		4.42

3 marks

Question 3 (4 Marks)

Treatment of over and under absorption of overheads are:-

(i) **Writing off to costing P&L A/c:–** Small difference between the actual and absorbed amount should simply be transferred to costing P&L A/c, if difference is large then investigate the causes and after that abnormal loss shall be transferred to costing P&L A/c.

(ii) **Use of supplementary Rate**: Under this method the balance of under and over absorbed overheads may be charged to cost of W.I.P., finished stock and cost of sales proportionately with the help of supplementary rate of overhead.

(iii) **Carry Forward to Subsequent Year:** Difference should be carried forward in the expectation that next year the position will be automatically corrected. This would really mean that costing data of two years would be wrong.

Question 4 (8 Marks)

(b) Computation of Discounted Payback Period, Net Present Value (NPV) and Internal Rate of Return (IRR) for Two Machines

Calculation of Cash Inflows (1 mark)

	Machine – I (`)	Machine – II (`)
Annual Income before Tax and Depreciation	3,45,000	4,55,000
Less : Depreciation		
Machine – I: 10,00,000 /5	2,00,000	-
Machine – II: 15,00,000 / 6	-	2,50,000
Income before Tax	1,45,000	2,05,000
Less: Tax @ 30 %	43,500	61,500
Income after Tax	1,01,500	1,43,500
Add: Depreciation	2,00,000	2,50,000
Annual Cash Inflows	3,01,500	3,93,500

		Machine – I			Machine – II		
Year	P.V. of Re.1 @12%	Cash flow	P.V.	Cumulative P.V	Cash flow	P.V.	Cumulative P.V.
1	0.893	3,01,500	2,69,240	2,69,240	3,93,500	3,51,396	3,51,396
2	0.797	3,01,500	2,40,296	5,09,536	3,93,500	3,13,620	6,65,016
3	0.712	3,01,500	2,14,668	7,24,204	3,93,500	2,80,172	9,45,188
4	0.636	3,01,500	1,91,754	9,15,958	3,93,500	2,50,266	11,95,454
5	0.567	3,01,500	1,70,951	10,86,909	3,93,500	2,23,115	14,18,569
6	0.507	-	-	-	3,93,500	1,99,505	16,18,074

Discounted Payback Period for:

Machine - I

$$\text{Discounted Payback Period} = 4 + \frac{(10,00,000 - 9,15,958)}{1,70,951}$$

$$= 4 + \frac{84,042}{1,70,951}$$

2 marks

$$= 4 + 0.4916$$

$$= 4.49 \text{ years or } 4 \text{ years and } 5.9 \text{ months}$$

Machine - II

$$\text{Discounted Payback Period} = 5 + \frac{(15,00,000 - 14,18,969)}{1,99,505}$$

$$= 5 + \frac{81,431}{1,99,505}$$

$$= 5 + 0.4082$$

$$= 5.41 \text{ years or } 5 \text{ years and } 4.9 \text{ months}$$

Net Present Value for:

Machine – I

NPV = ₹ 10,86,909 – 10,00,000 = ₹ 86,909 2 marks

Machine – II

NPV = ₹ 16,18,074 – 15,00,000 = ₹ 1,18,074

Internal Rate of Return (IRR) for:

Machine – I

$$\text{P.V. Factor} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}} = \frac{10,00,000}{3,01,500} = 3.3167$$

PV factor falls between 15% and 16% 2 marks

Present Value of Cash inflow at 15% and 16% will be:

Present Value at 15% = 3.353 x 3,01,500 = 10,10,930

Present Value at 16% = 3.274 x 3,01,500 = 9,87,111

$$\text{IRR} = 15 + \frac{10,10,930 - 10,00,0000}{10,10,930 - 9,87,111} \times (16 - 15)$$

$$= 15 + \frac{10,930}{23,819} \times 1 = 15.4588\% = 15.46\%$$

Machine - II

$$\text{P.V. Factor} = \frac{15,00,000}{3,93,500} = 3.8119$$

Present Value of Cash inflow at 14% and 15% will be:

Present Value at 14% = 3.888 x 3,93,500 = 15,29,928

Present Value at 15% = 3.785 x 3,93,500 = 14,89,398

$$\text{IRR} = 14 + \frac{15,29,928 - 15,00,000}{15,29,928 - 14,89,398} \times (15 - 14)$$

$$= 14 + \frac{29,928}{40,530} \times 1 = 14.7384\ \% = 14.74\%$$

(ii) **Advise to the Management**

Ranking of Machines in terms of the Three Methods

	Machine - I	Machine - II
Discounted Payback Period	I	II
Net Present Value	II	I
Internal Rate of Return	I	II

1 mark

Advise: *Since Machine - I has better ranking than Machine – II, therefore, Machine – I should be selected*

Question 5 (8 marks)

	(Rs.in lakhs)
Equipment Cost	150
Working Capital	25
	175

Calculation of Cash Inflows: **(3 Marks)**

Years	1	2	3-5	6-8
Sales in units	80,000	1,20,00	3,00,000	2,00,000
	(Rs.)	**(Rs.)**	**(Rs.)**	**(Rs.)**
Contribution@Rs.60 p.u	48,00,000	72,00,000	1,80,00,000	1,20,00,00
Fixed cost	16,00,000	16,00,000	16,00,000	16,00,000
Advertisement	30,00,000	15,00,000	10,00,000	4,00,000
Depreciation	15,00,000	15,00,000	16,50,000	16,50,000
Profit/(loss)	13,00,000	26,00,000	1,37,50,000	83,50,000
Tax @50%	NIL	13,00,000	68,75,000	41,75,000
Profit/(loss)after tax	(13,00,000)	13,00,000	68,75,000	41,75,000
Add: Depreciation	15,00,000	15,00,000	16,50,000	16,50,000
Cash inflow	2,00,000	28,00,000	85,25,000	58,25,000

Computation of PV of Cash Inflow**(4 Marks)**

Year	Cash inflow(Rs.)	PV Factor@12%	(Rs.)
1	2,00,000	0.893	1,78,600
2	28,00,000	0.797	22,31,600
3	85,25,000	0.712	60,69,800
4	85,25,000	0.636	54,21,900
5	85,25,000	0.567	48,33,675
6	58,25,000	0.507	29,53,275
7	58,25,000	0.452	26,32,900
8	58,25,000	0.404	23,53,300
Working Capital	15,00,000	0.404	40,400
(A)			2,73,21,450
Cash Outflow:			
Initial Cash Outlay	1,75,00,000	1.000	1,75,00,000
Additional Investment	10,00,000	0.797	7,97,000
(B)			1,82,97,000
Net Present Value(NPV) (A-B)			90,24,450

Recommendation :Accept the project in view of positive NPV.**(1 mark)**

Question 6 (8 Marks)

Working Notes:

1. Capital employed before expansion plan:

	(Rs.)
Equity shares (Rs.10 x80,000 shares)	8,00,000
Debenture {(Rs.1,20,000/12) x100}	10,00,000
Retained earnings	18,00,000
Total capital employed	36,00,000

(1/2 mark)

2.**Earnings before the payment of interest and tax(EBIT):**

	(Rs.)
Profit(EBT)	6,00,000
Add: Interest	1,20,000
EBIT	7,20,00

(1/2 mark)

3.Return on Capital Employed (ROCE):

$$\text{Roce} = \frac{\text{EBIT}}{\text{Capital employed}} \times 100 = \frac{\text{Rs. } 7{,}20{,}000}{\text{Rs. } 36{,}00{,}000} \times 100 = 20\%$$

(1 mark)

4.Earnings before interest and tax (EBIT) after expansion scheme: (1 mark)

After expansion, capital employed =Rs.36,00,000+Rs.8,00,000
=Rs.44,00,000
Desired EBIT =20% x Rs.44,00,000=Rs.8,80,000

(i) Computation or Earnings per Share (EPS) under the following options: (4 Marks)

	Present	**Expansion scheme Additional funds raised as**	
		Debt	**Equity**
	(Rs.)	**(Rs.)**	**(Rs.)**
Earnings before Interest and Tax(EBIT)	7,20,000	8,80,000	8,80,000
Less: Interest –Old capital	1,20,000	1,20,000	1,20,000
-New capital	-	96,000 (Rs.8,00,000 x12%)	-
Earnings before Tax(EBT)	6,00,000	6,64,000	7,60,000
Less: Tax(50%of EBT)	3,00,000	3,32,000	3,80,000
PAT	3,00,000	3,32,000	3,80,000
No. of shares outstanding	80,000	80,000	1,60,000
Earnings per share(EPS)	3.75 $\left(\frac{\text{Rs. } 3{,}00{,}000}{80{,}000}\right)$	4.15 $\left(\frac{\text{Rs. } 3{,}32{,}000}{80{,}000}\right)$	2.38 $\left(\frac{\text{Rs. } 3{,}80{,}000}{160{,}000}\right)$

(ii) Advise to the Company : When the expansion scheme is financed by additional debt, the EPS is higher .Hence, the company should finance the expansion scheme by raising debt.**(1 Mark)**

Question 7 (8 Marks)

(a) Overhead Distribution Statement (2 marks)

	Production Departments		Service Departments	
	Machine Shops	Packing	General Plant	Stores
Allocated Overheads:	(`)	(`)	(`)	(`)
Indirect labour	80,000	60,000	40,000	1,10,000
Maintenance Material	34,000	16,000	21,000	28,000
Misc. supplies	15,000	29,000	9,000	6,000
Supervisor's salary	--	--	1,60,000	--
Cost & payroll salary	--	--	8,00,000	--
Total allocated overheads	1,29,000	1,05,000	10,30,000	1,44,000
Add: Apportioned Overheads (As per Schedule below)	18,43,500	7,01,250	2,27,750	7,31,500
	19,72,500	8,06,250	12,57,750	8,75,500

Schedule of Apportionment of Overheads (2 marks)

Item of Cost	Basis	Production Departments		Service Departments	
		Machine Shops (`)	Packing (`)	General Plant (`)	Stores (`)
Power	HP hours (7 : 1 : - : 2)	5,46,000	78,000	--	1,56,000
Rent	Floor space (5 : 2 : 1 : 4)	3,00,000	1,20,000	60,000	2,40,000
Fuel & Heat	Radiator sec. (3 : 6 : 2 : 4)	1,20,000	2,40,000	80,000	1,60,000
Insurance	Investment (10 : 3 : 1 : 2)	75,000	22,500	7,500	15,000
Taxes	Investment (10 : 3 : 1 : 2)	52,500	15,750	5,250	10,500
Depreciation	Investment (10 : 3 : 1 : 2)	7,50,000	2,25,000	75,000	1,50,000
		18,43,500	7,01,250	2,27,750	7,31,500

(b) Re-distribution of Overheads of Service Departments to Production Departments: (4 marks)

Let, the total overheads of General Plant = 'a' and the total overheads of Stores = 'b' a = 12,57,750 + 0.3b .....(i)

b = 8,75,500 + 0.2a.....(ii)

Putting the value of 'b' in equation no. (i)

a = 12,57,750 + 0.3 (8,75,500 + 0.2a)

Or a = 12,57,750 + 2,62,650 + 0.06a

Or 0.94a = 15,20,400 Or a = 16,17,447 (appx.)

Putting the value of a = 16,17,447 in equation no. (ii) to get the value of 'b'

b = 8,75,500 + 0.2 × 16,17,447 = 11,98,989 (appx.)

Particulars	**Total (`)**	**Machine Shops (`)**	**Packing (`)**
Allocated and Apportioned overheads as per Primary distribution	27,78,750	19,72,500.00	8,06,250.00
- General Plant	16,17,447	8,08,723.50 $(16,17,447 \times \frac{5}{10})$	4,85,234.10 $(16,17,447 \times \frac{3}{10})$
- Stores	11,98,989	5,99,494.50 (11,98,989 × 50%)	2,39,797.80 (11,98,989 × 20%)
		33,80,718	15,31,281.9

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