

Cost & Financial Management (Solution)

November 2011

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1. (a) (i) Margin of Safety = $\frac{\text{actual Sales} - \text{Break even sales}}{\text{Actual Sales}}$

$$40\% = \frac{50 \text{ lakhs} - \text{BES}}{50 \text{ lakhs}}$$

Break even sales = 30 lakhs.

- (ii) Break Even sales = $\frac{\text{Fixed cost}}{\text{Pv ratio}}$

$$30 \text{ lakh} = \frac{\text{Fixed cost}}{50\%}$$

Fixed cost = 15 lakh

$$\text{Required Sales} = \frac{\text{Fixed Expenses} + .10x}{\text{Pv ratio}}$$

$$x = \frac{15 \text{ lakh} + .10x}{0.50}$$

X = 37.50 lakh

$$\begin{aligned} \text{Sales in units} &= 3750000/1000 \\ &= 3750 \text{ units} \end{aligned}$$

1. (b) (i) Rowan system = $\text{time taken} \times \text{rate per hour} + \frac{\text{time saved}}{\text{Time allowed}} \times \text{time taken} \times \text{rate per hour}$

$$\begin{aligned} &= 120 \text{ hours} \times (10+30/8) + \frac{30}{150} \times 120 \times (10+30/8) \\ &= \text{Rs. 1980} \end{aligned}$$

- (ii) Efficiency level = $\frac{\text{Time allowed}}{\text{Time Taken}}$

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$$= 150/120$$
$$= 125 \%$$

$$\text{Basic wage} = 120 * (10+30/8)$$
$$= \text{Rs. } 1650$$

$$\text{Bonus} = 20 \% * 1650 + 25 \% * 1650$$
$$= \text{Rs. } 742.50$$

1. (c) incremental Gain = $120000 * 15\%$

$$= 18000$$

$$\text{Investment in Debtors} = 102000 * 1.5/12$$
$$= 12750$$

Incremental Cost

$$\text{Bad Debts} = 10\% * 120000 = 12000$$

$$\text{Interest loss} = 12750 * \frac{40\%}{1-.30}$$
$$= 7286$$

$$\text{Total incremental Cost} = 12000 + 7286$$
$$= 19286$$

$$\text{Incremental loss} = 19286 - 18000$$
$$= 1286$$

1. (d) $k_e = \text{EPS}/\text{MPS}$

$$= 4/40$$
$$= 10\%$$

OR

$$K_e = D1/P + G$$
$$= 4 * 25\% / 40 + .08$$
$$= 10.50\%$$

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$$\begin{aligned}K_d &= \text{upto 2 lakh} = 10\% (1-.30) \\&= 7\% \\&= \text{Beyond 2 lakh} = 15\% (1-.30) \\&= 10.50\%\end{aligned}$$

$$\begin{aligned}WACC &= 10\% \times 6/10 + 7\% \times 2/10 + 10.50\% \times 2/10 \\&= 9.5\%\end{aligned}$$

Note :- We have given preference to the Gordon Model (for K_e) for computing the WACC, alternatively we can also take the avg of both K_e and then can calculate WACC by taking that avg. K_e .

2 . (a) Actual overhead incurred = Rs 79 lakh

$$\begin{aligned}\text{Absorbed overhead} &= 1.50 \text{ lakh days} * \text{Rs } 50 \\&= 75\end{aligned}$$

Under absorbed overhead = $79 - 75 = 4$ lakh

$$\begin{aligned}\text{Underabsorbed overhead due to defective planning} &= 4 \text{ lakh} * 60\% \\&= 2.40 \text{ lakh}\end{aligned}$$

These overhead will be charged to costing P & L account.

$$\begin{aligned}\text{Overhead due to increased cost} &= 4 - 2.40 \\&= 1.60 \text{ lakh}\end{aligned}$$

These overhead will be charged through the supplementary rate

$$\text{Supplementary rate} = \frac{\text{Overhead}}{\text{Equi. Prod.}}$$

$$= \frac{1.60 \text{ lakh}}{(30000 + 5000 + 10000 * .50)}$$

$$= \text{Rs } 4 \text{ per unit.}$$

Therefore amount chargeable to

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1. Cost of sales = $30000 \times 4 = 120000$
2. Closing stock = $5000 \times 4 = 20000$
3. WIP = $10000 \times 50\% \times 4 = 20000$

2. (b) (i) Liquid Asset = CA – stock - prepaid expenses
 $= 3050000 - 2160000 - 10000$
 $= 880000$

Liquid Liability = current liab – bank od
 $= 1000000$

Quick Ratio = $880000 / 1000000$
 $= 0.88$

(ii) Debt – equity Ratio = $1600000 / (2000000 + 800000)$
 $= 0.5714$

(iii) Return on capital employed = EBIT / capital employed

Where, EBIT = 120000

Capital employed = $1600000 + 2000000 + 800000$
 $= 4400000$

Ratio will be = $120000 / 4400000$
 $= 27.27\%$

(iv) Avg collection period = $\frac{\text{Avg. debtors}}{\text{Cr sales}} \times 360 \text{ days}$
 $= 360 \text{ days} \times \frac{400000}{(4000000 \times 80\%)}$
 $= 45 \text{ days.}$

3. (a) input detail output mat 1 Lab

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8000	Op wip			
182000	Input			
	Nor. loss	15200		
	Abno effectives	(1200)	100% (1200)	100% (1200)
	Output trfd	158000	158000	158000
	cl. wip	18000	100% 18000	70% 12600
190000	total	190000	174800	169400

Statement of cost per unit

$$M1 = \frac{63900 + 756900 - 15200 \times 8}{174800} = 4$$

$$\text{Lab \& o/h} = \frac{10800 + 5400 + 328000 + 164000}{169400} = 3$$

Statement of valuation

- Abnormal effectives = $1200 \times (4+3) = 8400$
- Closing WIP = $M1 = 4 \times 18000 = 72000$
Lab & ov = $12600 \times 3 = 37800$ 109800
- Output Trfd = $158000 \times (4+3) = 11,06,000$

To op wip	8000	80100	By nor loss	15200	121600
To mat intro	182000	756900			
To lab		328000	By next process	158000	1106000
To overhead		164000			
			By cl. wip	18000	109800
To abno. eff	1200	8400			

3. (b) Total asset turnover ratio = sales / total asset

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$$2.5 = \text{sales} / 4800000$$

$$\text{Sales} = 1,20,00,000$$

Now sales = 1,20,00,000
VC @ 60% = 72,00,000

Contribution	= 48,00,000
(-) FC	= <u>28,00,000</u>
EBIT	20,00,000
(-) intt.	<u>4,20,000</u>
EBT	15,80,000
(-) tax @ 30%	<u>4,74,000</u>
EAT	11,06,000

No. of share 100000

EPS = Rs. 11.06

(ii) combined leverage = $4800000 / 1580000$
= 3.04

4. (a) Calculation of operating cycle :-

$$\begin{aligned} \text{Raw material} &= \frac{\text{avg raw material}}{\text{Raw mat consumed}} * 365 \\ &= \frac{(180000 + 200000) / 2}{180000 + 1100000 - 200000} * 365 \\ &= 64 \text{ days} \end{aligned}$$

$$\begin{aligned} \text{WIP} &= \frac{\text{Avg Wlp}}{\text{Work Cost}} * 365 \\ &= \frac{(60000 + 100000) / 2}{(60000 + 1080000 + 300000 + 200000 - 100000)} * 365 \\ &= 80000 / 1540000 * 365 = 19 \text{ days} \end{aligned}$$

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$$\text{Finished Goods} = \frac{\text{Avg stock}}{\text{Cost of goods sold}} * 365$$

$$= \frac{(260000+300000)/2}{(260000+1540000+175000-300000)} * 365$$

$$= 280000/1675000 * 365 = 61 \text{ days}$$

$$\text{Debtors} = \text{Avg debtors} / \text{credit sales} * 365$$

$$= \frac{(150000+200000)/2}{2000000} * 365$$

$$= 9 \text{ days}$$

$$\text{Creditors} = \text{avg creditors} / \text{cr purchase} * 365$$

$$= \frac{(200000+240000)/2}{1100000} * 365$$

$$= 73 \text{ days}$$

$$\text{Net operating cycle} = 64+19+61+9-73 \\ = 80 \text{ days}$$

4. (b) do yourself.

6. (a) Avg Rate of Return = Avg income / avg. investment * 100

$$\text{Avg income} = \text{cash flow} - \text{dep} - \text{tax}$$

Machine X

$$\text{Cash outflow} = 7000+6000+12000 = 25000 \text{ p.a.}$$

$$\text{Cash inflow} = 10000+90000 = 1,00,000 \text{ p.a.}$$

$$\text{Cash flow} = 100000-25000 = 75000 \text{ p.a.}$$

$$\text{Dep} = 150000/5 = 30000 \text{ p.a.}$$

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Cash flow after Tax = $(75000 - 30000) * (1 - .30) = 31500$ p.a.
& dep.

$$ARR = 31500 / 150000 * 100 = 21 \%$$

Similarly for Machine Y

$$ARR = 42000 / 240000 * 100 = 17.50 \%$$

Therefore Machine X should be purchased.

(ii) Present value Index method = PV of Cash Inflow

PV of cash outflow

Machine X

$$PV \text{ of cash inflow} = 100000 * 3.79 + 30000 * 30\% + 25000 * 30\% = 395500$$

$$PV \text{ of Cash outflow} = 150000 + 25000 * 3.79 + 100000 * 30\% = 274750$$

$$PI = 395500 / 274750 = 1.4394$$

Machine Y

$$PV \text{ of cash Inflow} = 135000 * 4.354 + 40000 * 30\% + 35000 * 30\% = 610290$$

$$PV \text{ of Cash Outflow} = 240000 + 35000 * 4.354 + 135000 * 30\% = 432890$$

$$PI = 610290 / 432890 = 1.4098$$

Therefore on the basis of PI value Machine x is preferable.

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(b)

	Budget				Standard				Actual	
Mat	10 kg	10	100	48000	10	480000	50000 kg	10.5	525000	
lab	6 hrs	5.50	33	28800	5.50	158400	31000 hrs	5	155000	
Var o/h	6 hrs	10	60	28800	10	288000	31000 hrs	9.4516	293000	
	1 unit			4800 units			4800 units			

Material cost variance = Standard cost - actual cost

$$= 480000 - 525000$$

$$= 45000 \text{ A}$$

Labour Cost Variance = 158400 - 155000 = 3400 F

Variable oh variance = 288000 - 293000 = 5000 A

Fixed overhead cost variance = Recovered – actual

$$= (450000 / 30000) * 31000 - 470000$$

$$= \text{Rs. } 5000 \text{ A}$$