CMR INSTITUTE OF TECHNOLOGY

Internal Assessment Test 2 – Nov 2016

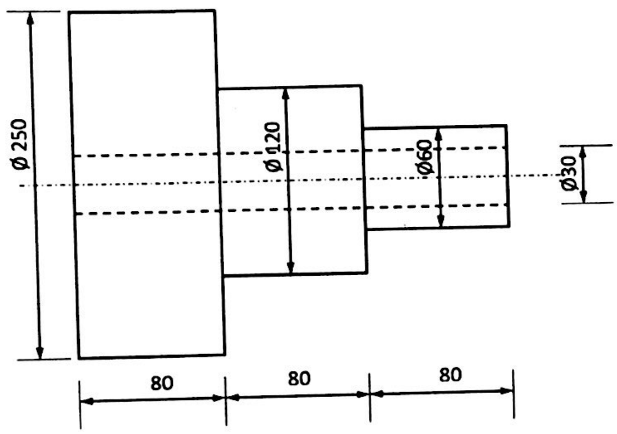
Sub: **Engineering Economics** **Code:** 10ME71

Date: 02/ 11/ 2016 Duration: 90 mins Max Marks: 50 **Sem:** VII **Branch:** Mech

Note: Answer Any 5 questions. Each question carries 10 marks.

1. a) Explain objectives of costing and briefly explain Standard cost, Marginal cost and components of cost.
   b) Explain why Costing and Estimation is necessary and with a neat diagram explain how selling price of a product is determined.

2. Determine the material cost for figure shown below if density is 7.009g/cc and material cost is Rs 20/Kg.



3. (a) Differentiate costing and estimation.
   (b) From the following data related to manufacturing a product, calculate profit earned on each unit.

Raw materials used	Rs.40,000/-
Direct wages	Rs.24,000/-
Machine hours worked	9,500hrs
Machine hour rate	Rs.4 per hour
Office overheads	20% of work cost
Selling overheads	Rs.1 per unit
Units produced	20,000
Units sold	18,000 at Rs.10 per unit

4. Explain the following. (i) Assets and liabilities. (ii) Sundry creditors and Sundry debtors (iii) Net profit margin. (iv) Current Ratio and Debt ratio (v) Inventory turnover

5. Total sales of a firm is Rs.6,40,000. It has a gross profit margin of 15% and current ratio is 2. The firm has current liability of Rs.96,000. Inventory is Rs.48000 and cash is Rs.16,000. Determine average inventory to be carried out by the firm if inventory turnover happens 5 times a year and determine the average collection period if opening balance of debtors is Rs.70,000.

6. Kirloskar company has total assets of Rs.8,00,000. 50% of asset is borrowed at 8% rate of interest. The direct cost for the year is estimated at Rs.4,80,000 and all other operating expenses is Rs.80,000. The goods will be sold to customer at 120% of direct cost. Tax rate is 12%. Calculate Net profit margin, Return on assets, Asset turnover and Return on equity.

7. (a) What do you mean by Ratio analysis, list advantages and limitations of the same.

(b) The balance sheet of a company is presented below calculate the (i) current ratio (ii) Gross profit ratio (iii) Debtors turnover ratio (iv) Operating Ratio.

Liability	**Amount (Rs)**	**Assets**	**Amount (Rs)**
Creditors	20,000/-	Cash in hand	15,380/-
Bills payable	12,750/-	Trade Creditors	11,260/-
Debentures	1,00,000/-	Stock on hand	56,160/-
Reserves	67,250/-	Fixed asset	2,17,200/-
Share Capital	1,00,000/-		

Net sales- Rs.1,80,000/-

Net profit- Rs.16,000/-

Gross Profit- Rs.40,000/-

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Solution IAT-2

1A) Costing :- helps in determining the Cost Incurred during production of goods.

helps in Controlling the Cost during Manufacturing.

For Cost Controlling, Managerial decisions.

Standard Cost :- It is the estimated or predetermined Cost of performing an operation or product. It is a Scientific process as it Analysis historical data and time related variable to arrive at a Conclusive value. also known as normal Cost.

Marginal Cost :- It is the rate of change of Cost which arises when production is Increased by one unit.

Components of Cost :-

- Material
- Labour
- Wages
- Expenses

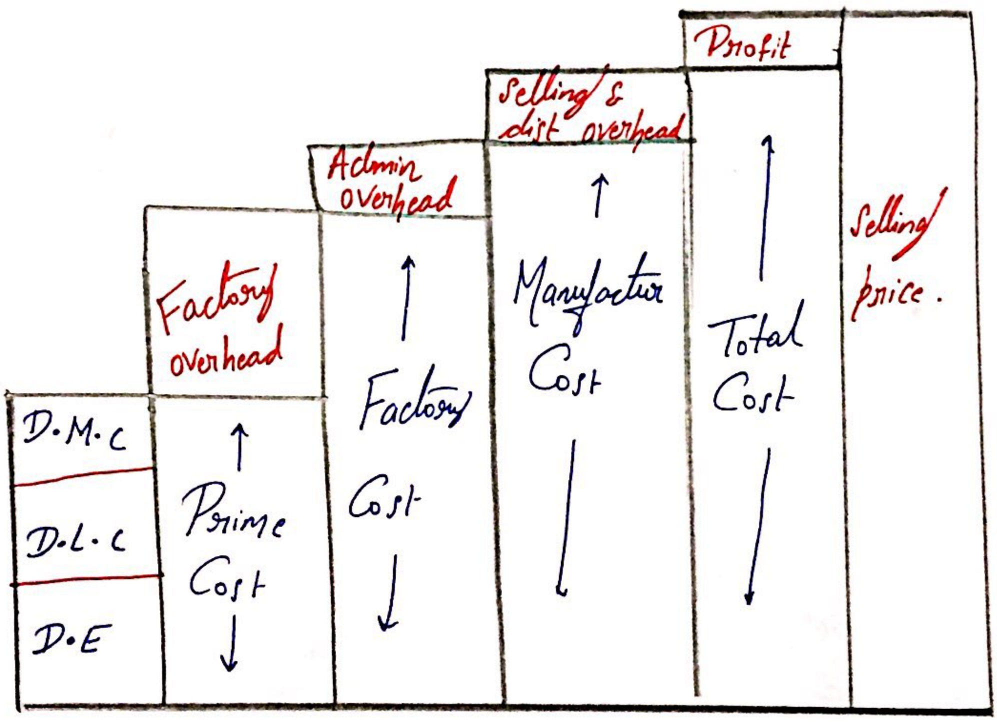
1b).

Costing and estimation is necessary because:

It helps Manufacturer to find total cost incurred to make a product, so selling price can be fixed.

- He can detect loss of time, wastage in use of material

- by estimating, manufacturer knows which process is expensive and can compare manufacturing cost of one process with other.



2A). $\rho = 7.009 g/cc$

$\rho = 7.009 \times 10^{-3} Kg/cc$

Material Cost = ₹20/Kg

Volume $V_A = \frac{\pi}{4} \times b d^2$

$\frac{\pi}{4} \times 80 \times 250^2 = 3926990.817 mm^3$

$V_B = \frac{\pi}{4} \times 80 \times 120^2 = 904778.68 mm^3$

$V_C = \frac{\pi}{4} \times 80 \times 60^2 = 508938.009 mm^3$

Total Volume $V_A + V_B + V_C = 3926990 + 904778.6 + 508938.009$

Volume of shaft $= \frac{\pi}{4} \times 240 \times 30^2$

$V_H = 169646.003 mm^3$.

Volume of blank $= V_T - V_H$

$= 4888318.169 mm^3$.

Mass $= \rho \times V$

$= 7.009 \times 10^{-3} \times 4888.318$

Mass $= \underline{34.262 Kg}$

Material Cost = Mass x Mat/Kg

$= 34.262 \times 20$

Material Cost = $\underline{₹ 685.24}$

3A).

Costing	Estimation
(1) This is done after goods are prepared / Manufactured	(1) This is made before product is Manufactu
(2) It requires financial skills and prepared by accounting people.	(2) person should have knowledge about product material cost.
(3) Keeps track of estimation & known when it will rise or fall.	(3) Deciding factor for determining profit or loss.

3(b). Raw material used = ₹ 40,000/-

(1) Prime Cost = Material + direct wages

= 40,000 + 24,000

P.C = ₹ 64,000/-

(2) Factory Cost = prime Cost + production overhead

= 64000 + (9500 x 4) = ₹ 102000/-

(3) Manufacturing Cost = Factory Cost + Admin overhead.

↓

0.2 x Work cost

= 0.2 x 102000

= 20400/-

⇒ 102000 + 20400

= ₹ 122400/-

(4) Total Cost = Manufact Cost + selling overhead.

= 122400 + (18000)

Closing Cost = $\frac{2000 \times 122400}{200000}$

= ₹12240/-

∴ Total Cost = 140400 - 12240

= ₹ 128160/-

Profit = Selling price - Total Cost

= (18000 x 10) - 128160

profit = ₹51840/- or ₹ 2.88/unit

(4A). (i) Assets & liabilities:- Asset is Amount or property owned by a person, liability is the amount that a person has to pay.

(ii) Sundry Creditors/Debitors:- Sundry Creditors is amount that Company owes has to be paid. Sundry Debtors is Amount that Company

(iii) Net profit Margin:- $\frac{\text{profit After tax}}{\text{Net sales}}$

(iv) Current ratio:- $\frac{\text{Current Asset}}{\text{Current liability}}$

(v) Inventory turnover:- $\frac{\text{Cost of Goods sold}}{\text{Avg Inventory}}$.

6). 5) (i) Average Inventory = $\frac{\text{Cost of Goods sold}}{\text{Avg Inventory}}$

$$5 = \frac{640000 - (0.15 \times 640000)}{\text{Avg Inventory}}$$

Avg Inventory = ₹ 108800/-

(ii) Avg Collection period = $\frac{365}{\text{Debtors turnover}}$ → Debtors turnover = $\frac{\text{Net sales}}{\text{Avg debtors}}$

$$\text{Avg debtors} = \frac{O.D + C.d}{2}$$

C.d = Current Asset − (Inventory + Cash)

$$C.r = \frac{CA}{CL} \Rightarrow 2 = \frac{C.A}{96000}$$

C.A = 1,92,000/-

Closing debtors = 192000 − (48000+16000) = ₹1,28,000/-

$$\text{Avg debtors} = \frac{70000 + 128000}{2} = ₹99000/-$$

$$\text{Debtors turnover ratio} = \frac{6,40,000}{99000} = 6.464.$$

$$\text{Avg Collection period} = \frac{365}{6.464} = 57 \text{ days}$$

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6). Net profit Margin = $\frac{PAT}{Net\ sales}$.

PAT = Profit − 0.12 profit

Profit = (Direct Cost + other expense) + sales

= −(4,80,000 + 80,000) + 576000

[EBIT] profit = ₹ 16000/-

PAT = 16000 − (0.12 × 16000)

= ₹14080/-

⇒ Net profit Margin = $\frac{14080}{576000}$ = 0.024 or 24%.

Return on Asset = $\frac{EBIT\ (1 - Tax)}{Total\ Asset}$ = $\frac{16000(1-0.12)}{800000}$ = 1.76%.

(iii) Asset turnover = $\frac{Net\ sales}{Net\ asset}$ = $\frac{576000}{800000}$ = 0.72.

(iv) Return on equity = $\frac{PAT}{Net\ worth}$ = $\frac{14080}{400000}$ = 3.52%.

7a) Ratio Analysis is process of determining financial Strength and weakness of a Company by finding Various ratios between Various entries on a balance sheet or Profit or loss statement.

Advantages:-

① Ratio Analysis can be effective used in financial Management

② prepare balance sheet and financial statements.

limitations

Ratio Analysis is not suitable for short term financial goals.

7(b). Current ratio:- $\frac{\text{Current Asset}}{\text{Current liability}} = \frac{\text{Cash + trade + stock}}{\text{Creditors + Bills + Reserves}}$

$= \frac{15380 + 11260 + 56160}{20000 + 12760 + 67250} = 0.828$

$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Net sales}} = \frac{40,000}{1,80,000} = 0.222$