



J.K. SHAH[®]
TEST SERIES

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SUGGESTED SOLUTION

INTERMEDIATE M'19 EXAM

SUBJECT- COSTING AND F.M.

Test Code – CIM 8161

BRANCH - () (Date :)

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ANSWER-1

1. Workings:

	Skilled	Unskilled
Standard Rate per hour	80	60
Standard time for producing one unit	1.5 hours (Rs.120 ÷ Rs.80)	1.5 hours (Rs.90 ÷ Rs.60)
Actual hours paid (AHPaid)	6,600 hours	5,400 hours
Standard hours required to produce 4,000 units (SH)	6,000 hours (1.5 hours × 4,000 units)	6,000 hours (1.5 hours × 4,000 units)
Actual hours worked (AHWorked)	6600/100 × 97.5 = 6,435 hours	5400/100 × 97.5 = 5,265 hours
Revised Std. Hours (RSH)	$\left(\frac{6600 + 5400}{100} \times 97.5\right) \times 0.5$ = 5,850 hours	$\left(\frac{6600 + 5400}{100} \times 97.5\right) \times 0.5$ = 5,850 hours
Idle time Abnormal	6,600 - 6,435 = 165 hours	5,400 - 5,265 = 135 hours

(i) Labour Rate Variance = AHPaid (Std. Rate – Actual Rate)

$$\begin{aligned} & \text{- Skilled} && = 6,600 \text{ hours (Rs.80 – Rs.87.50)} && = \text{Rs.49,500 (A)} \\ & \text{- Unskilled} && = 5,400 \text{ hours (Rs.60 – Rs.55)} && = \underline{\text{Rs.27,000 (F)}} \\ &&&&&& = \underline{\text{Rs.22,500 (A)}} \end{aligned}$$

(ii) Labour Efficiency Variance = Std. Rate (SH – AHWorked)

$$\begin{aligned} & \text{- Skilled} && = \text{Rs.80 (6,000 hours – 6,435 hours)} = \text{Rs.34,800 (A)} \\ & \text{- Unskilled} && = \text{Rs.60 (6,000 hours – 5,265 hours)} = \underline{\text{Rs.44,100 (F)}} \\ &&&&&& = \underline{\text{Rs.9,300 (F)}} \end{aligned}$$

(iii) Labour Mix Variance = Std. Rate (RSH – AHWorked)

$$\begin{aligned} & \text{- Skilled} && = \text{Rs.80 (5,850 hours – 6,435 hours)} = \text{Rs.46,800 (A)} \\ & \text{- Unskilled} && = \text{Rs.60 (5,850 hours – 5,265 hours)} = \underline{\text{Rs.35,100 (F)}} \\ &&&&&& = \underline{\text{Rs.11,700 (A)}} \end{aligned}$$

- (iv) Labour Yield Variance = Std. Rate (SH – RSH)
- Skilled = Rs.80 (6,000 hours – 5,850 hours) = Rs.12,000 (F)
- Unskilled = Rs.60 (6,000 hours – 5,850 hours) = Rs.9,000 (F)
- = Rs.21,000 (F)
- (v) Labour Idle time Variance = Std. Rate × Idle time Abnormal
- Skilled = Rs.80 × 165 hours = Rs.13,200 (A)
- Unskilled = Rs.60 × 135 hours = Rs.8,100 (A)
- = Rs. 21300 (A)
- (vi) Variable Overhead Expenditure Variance
- = AH Worked (SR - AR)
- = 11700 hours $\left(\frac{Rs.75}{2 \times 1.5 \text{ hours}} - \frac{Rs.285000}{11700 \text{ hours}} \right)$
- = 11,700 hours (Rs.25 – Rs.24.36) = Rs.7,488 (F)
- (vii) Variable Overhead Efficiency Variance
- = Std. Rate (SH – AH Worked)
- = Rs.25 (12,000 – 11,700) = Rs.7,500 (F)

ANSWER-2

(i) Calculation of Cost of Capital for each source of capital:

- (a) Cost of Equity share capital: **(2 MARKS)**

$$K_e = \frac{D_0(1+g)}{\text{Market Price per share } (P_0)} + g = \frac{25\% \times Rs.100 (1+0.05)}{Rs.200} + 0.05$$

$$= \frac{Rs.26.25}{Rs.200} + 0.05 = 0.18125 \text{ or } 18.125\%$$

- (b) Cost of Preference share capital (K_p) = 9% **(1 MARK)**

- (c) Cost of Debentures (K_d) = $r(1 - t)$ **(1 MARK)**
- = 11% (1 – 0.3) = 7.7%.

- (d) Cost of Retained Earnings: $K_s = K_e (1 - t_p) = 18.125 (1 - 0.2) = 14.5\%$. **(1 MARK)**

(ii) **Weighted Average Cost of Capital on the basis of book value weights**

Source	Amount (Rs.)	Weights (a)	After tax Cost of Capital (%) (b)	WACC (%) (c) = (a) x (b)
Equity share	80,00,000	0.40	18.125	7.25
9% Preference share	20,00,000	0.10	9.000	0.90
11% Debentures	60,00,000	0.30	7.700	2.31
Retained earnings	40,00,000	0.20	14.500	2.90
	2,00,00,000	1.00		13.36

(2.5 MARKS)

(iii) **Weighted Average Cost of Capital on the basis of market value weights**

Source	Amount (Rs.)	Weights (a)	After tax Cost of Capital (%) (b)	WACC (%) (c) = (a) x (b)
Equity share	1,06,66,667	0.427	18.125	7.739
Retained Earnings	53,33,333	0.213	14.500	3.09
9% Preference share	24,00,000	0.096	9.000	0.864
11% Debentures	66,00,000	0.264	7.700	2.033
	2,50,00,000	1.000		13.726

(2.5 MARKS)

ANSWER-3

Since the amount of revenue generated from each category of customer is not given in the question. Let us consider Rs. 100 as the amount of revenue generated from each type of customer. Therefore, Rs. 100 shall be taken as the basis for reappraisal of Company's credit policy.

Statement showing the Evaluation of credit Policy

Particulars	Classification of Customers			
	1	2	3	4
A. Expected Profit:				
(a) Revenue	100	100	100	100
(b) Total Cost other than Bad Debt:				
(i) Cost of Goods Sold	85	85	85	85
(ii) Fixed Cost	5	5	5	5
	90	90	90	90
(c) Bad Debt	0	2.00	10.00	20.00
(d) Expected Profit [(a)-(b)-(c)]	10	8.00	0	(10.00)

B. Opportunity Cost of Investment in Receivables	1.66	1.55	1.48	2.96
C. Net Benefits [A-B]	8.34	6.45	(1.48)	(12.96)

Recommendation: The reappraisal of company's credit policy indicates that the company either follows a lenient credit policy or it is inefficient in collection of debts. Even though the company sells its products on terms of net 30 days, it allows average collection period for more than 30 to all categories of its customers.

The company can continue with customers covered in categories 1 and 2 since net benefits are favourable. The company either should not continue with customer covered in categories 3 and 4 or should reduce the bad debt % by at least 1.48% and 12.96% respectively since net benefits are unfavourable to the extent of 1.48% and 12.96% of sales respectively. The other factors to be taken into consideration before changing the present policy includes (i) past performance of the customers and (ii) their credit worthiness.

(6 MARKS)

Working Note: Calculation of Opportunity Cost

(4*1 = 4 MARKS)

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Average collection period}}{365} \times \text{Rate of interest}$$

$$\text{For Category 1} = \text{Rs.90} \times \frac{45}{365} \times \frac{15}{100} = \text{Rs.1.66}$$

$$\text{For Category 2} = \text{Rs.90} \times \frac{42}{365} \times \frac{15}{100} = \text{Rs.1.55}$$

$$\text{For Category 3} = \text{Rs.90} \times \frac{40}{365} \times \frac{15}{100} = \text{Rs.1.48}$$

$$\text{For Category 4} = \text{Rs.90} \times \frac{80}{365} \times \frac{15}{100} = \text{Rs.2.96}$$

ANSWER-4

Pattern of raising Capital:

Portion of Debt = Rs. 20,00,000 × 25% = Rs. 5,00,000 and

Portion of Equity = Rs. 20,00,000 × 75% = Rs. 15,00,000, of this Rs. 4,00,000 is from retained earnings and Rs.11,00,000 by issuing fresh equity shares.

$$(i) \quad \text{Cost of Debt } (K_d) = \frac{\text{Total Interest } (1-t)}{\text{Debt}}$$
$$\frac{(10\% \text{ of Rs.}2,00,000 + 13\% \text{ of Rs.}3,00,000)(1-0.3)}{\text{Rs.}5,00,000}$$
$$= \frac{\text{Rs.}59,000(1-0.3)}{\text{Rs.}5,00,000} = 0.826 \text{ or } 8.26\%$$

$$(ii) \quad \text{Cost of Equity } (K_e) = \frac{\text{EPS} \times \text{Payout ratio } (1+g)}{P_0} + g$$
$$= \frac{\text{Rs.}12 \times 0.5 (1+0.1)}{\text{Rs.}60} + 0.01 = 0.11 + 0.10 = 0.21 \text{ or } 21\%$$

$$\text{Cost of retained earnings } (K_s) = K_e (1 - t_p) = 0.21(1 - 0.2) = 0.168 \text{ or } 16.8\%$$

(7 MARKS)

(iii) **Weighted average cost of capital (K_o)**

(3 MARKS)

Source of capital	Amount (Rs.)	Proportion of total Capital	Cost of Capital (%)	WACC (%)
Equity Capital	11,00,000	0.55	21.00	11.550
Retained earning	4,00,000	0.20	16.80	3.360
Debt	5,00,000	0.25	8.26	2.065
Total	20,00,000	1.00		16.975

ANSWER-5

$$(a) \quad \text{Variable Overhead rate per unit} = \frac{\text{Difference of overhead at two level}}{\text{Difference in production units}}$$
$$= \frac{\text{Rs.}210000 - \text{Rs.}180000}{10000 \text{ units} - 8000 \text{ units}} = \text{Rs. } 15$$

$$(b) \quad \text{Fixed Overhead} = \text{Rs. } 1,80,000 \times (8,000 \text{ units} \times \text{Rs. } 15) = \text{Rs. } 60,000$$

$$(c) \quad \text{Standard hours per unit of production} = \frac{\text{Std. overhead absorption rate}}{\text{Std. rate per hour}}$$
$$= \text{Rs. } 20 / 4 = 5 \text{ hours}$$

$$(d) \text{ Standard Variable Overhead Rate per hour} = \frac{\text{variable overhead per unit}}{\text{Std.hour per unit}}$$

$$= \text{Rs. } 15 / 5 \text{ hours} = \text{Rs. } 3$$

$$(E) \text{ Standard Fixed Overhead Rate per hour} = \text{Rs. } 4 - \text{Rs. } 3 = \text{Rs. } 1$$

$$(f) \text{ Actual Variable Overhead} = \text{Rs. } 2,95,000 - \text{Rs. } 62,500 = \text{Rs. } 2,32,500$$

$$(g) \text{ Actual Variable Overhead Rate per Hour} = 232500 / 74000 \text{ hours} = \text{Rs. } 3.1419$$

$$(h) \text{ Budgeted hours} = 12,000 \text{ units} \times 5 \text{ hours} = 60,000 \text{ hours}$$

$$(i) \text{ Standard Hours for Actual Production} = 15,560 \text{ units} \times 5 \text{ hours} = 77,800 \text{ hours}$$

(i) Variable Overhead Efficiency and Expenditure Variance:

$$\text{Variable Overhead Efficiency Variance} = \text{Std. Rate per hour (Std. Hours} - \text{Actual Hours)}$$

$$= \text{Rs. } 3 (77,800 \text{ hours} - 74,000 \text{ hours})$$

$$= \text{Rs. } 11,400 \text{ (F)}$$

$$\text{Variable Overhead Expenditure Variance} = \text{Actual Hours (Std. Rate} - \text{Actual Rate)}$$

$$= 74,000 \text{ hours (Rs. } 3 - \text{Rs. } 3.1419)$$

$$= \text{Rs. } 10,500 \text{ (A)}$$

(ii) Fixed Overhead Efficiency and Capacity Variance:

$$\text{Fixed Overhead Efficiency Variance} = \text{Std. Rate per Hour (Std. Hours} - \text{Actual Hours)}$$

$$= \text{Rs. } 1(77,800 \text{ hours} - 74,000 \text{ hours}) = \text{Rs. } 3,800 \text{ (F)}$$

$$\text{Fixed Overheads Capacity Variance} = \text{Std. Rate per Hour (Actual Hours} - \text{Budgeted Hours)}$$

$$= \text{Rs. } 1(74,000 \text{ hours} - 60,000 \text{ hours})$$

$$= \text{Rs. } 14,000 \text{ (F)}$$

(10 MARKS)