

CHAPTER 8

STANDARD COSTING

Question 1

Calculate Efficiency and Capacity ratio from the following figures:

<i>Budgeted production</i>	<i>80 units</i>
<i>Actual production</i>	<i>60 units</i>
<i>Standard time per unit</i>	<i>8 hours</i>
<i>Actual hours worked</i>	<i>500</i>

(Nov 2007, 2 Marks)

Answer

$$\text{Efficiency Ratio} = \frac{\text{Actual output in terms of standard hours}}{\text{Actual hour worked}} \times 100$$

$$\text{Or } \frac{480}{500} \times 100 = 96\%$$

$$\text{Capacity Ratio} = \frac{\text{Actual hours worked}}{\text{Budgeted hours}} \times 100$$

$$\text{Or } \frac{500}{640} \times 100 = 78.12\%$$

Question 2

KPR Limited operates a system of standard costing in respect of one of its products which is manufactured within a single cost centre. The Standard Cost Card of a product is as under:

<i>Standard</i>		<i>Unit cost (Rs.)</i>
<i>Direct material</i>	<i>5 kgs @ Rs. 4.20</i>	<i>21.00</i>
<i>Direct labour</i>	<i>3 hours @ Rs. 3.00</i>	<i>9.00</i>
<i>Factory overhead</i>	<i>Rs. 1.20 per labour hour</i>	<u><i>3.60</i></u>
	<i>Total manufacturing cost</i>	<u><i>33.60</i></u>

The production schedule for the month of June, 2007 required completion of 40,000 units. However, 40,960 units were completed during the month without opening and closing work-in-process inventories.

Purchases during the month of June, 2007, 2,25,000 kgs of material at the rate of Rs. 4.50 per kg. Production and Sales records for the month showed the following actual results.

Material used 2,05,600 kgs.

Direct labour 1,21,200 hours; cost incurred *Rs. 3,87,840*

Total factory overhead cost incurred *Rs. 1,00,000*

Sales *40,000 units*

Selling price to be so fixed as to allow a mark-up of 20 per cent on selling price.

Required:

- (i) Calculate material variances based on consumption of material.*
- (ii) Calculate labour variances and the total variance for factory overhead.*
- (iii) Prepare Income statement for June, 2007 showing actual gross margin.*
- (iv) An incentive scheme is in operation in the company whereby employees are paid a bonus of 50% of direct labour hour saved at standard direct labour hour rate. Calculate the Bonus amount.*

(Nov,2007,15Marks)

Answer

(i) Material variances:

- (a) Direct material cost variance = Standard cost – Actual cost

$$= 40,960 \times 21 - 2,05,600 \times 4.50$$

$$= 8,60,160 - 9,25,200 = 65,040 \text{ (A)}$$
- (b) Material price variance = AQ (SP – AP)

$$= 2,05,600 (4.20 - 4.50) = 61,680 \text{ (A)}$$
- (c) Material usages variance = SP (SQ – AQ)

$$= 4.20 (40,960 \times 5 - 2,05,600) = 3,360 \text{ (A)}$$

(ii) Labour variances and overhead variances:

- (a) Labour cost variance = Standard cost – Actual cost

$$= 40,960 \times 9 - 3,87,840 = 19,200 \text{ (A)}$$
- (b) Labour rate variance = AH (SR – AR)

$$1,21,200 (3 - 3.20) = 24,240 \text{ (A)}$$

$$(c) \text{ Labour efficiency variance} = SR (SH - AH) \\ = 3 (40,960 \times 3 - 1,21,200) = 5,040 (F)$$

$$(d) \text{ Total factory overhead variance} = \text{Factory overhead absorbed} - \text{factory overhead incurred} \\ = 40,960 \times 3 \times 1.20 - 1,00,000 = 47,456 (F)$$

(iii) Preparation of income statement

Calculation of unit selling price	Rs.
Direct material	21
Direct labour	9
Factory overhead	<u>3.60</u>
Factory cost	33.60
Margin 25% on factory cost	<u>8.40</u>
Selling price	<u>42.00</u>

(iv) Income statement

		Rs.
Sales 40,000 units × 42		16,80,000
Less: Standard cost of goods sold 40,000 × 33.60		<u>13,44,000</u>
		3,36,000
Less: Variances adverse		
Material price variance	61,680	
Material quantity variance	3,360	
Labour rate variance	<u>24,240</u>	<u>89,280</u>
		2,46,720
Add: Favourable variance		
Labour efficiency variance	5,040	
Factory overhead	<u>47,456</u>	<u>52,496</u>
Actual gross margin		<u>2,99,216</u>

(iv) Labour hour saved

	Rs.
Standard labour hours 40,960 × 3	1,22,880

Actual labour hour worked	<u>1,21,200</u>
Labour hour saved	<u>1,680</u>

Bonus for saved labour = .50 (1,680 × 3) = 2,520.

Question 3

TQM Ltd. has furnished the following information for the month ending 30th June, 2007:

	Master Budget	Actual	Variance
Units produced and sold	<u>80,000</u>	<u>72,000</u>	
Sales (Rs.)	<u>3,20,000</u>	<u>2,80,000</u>	40,000 (A)
Direct material (Rs.)	80,000	73,600	6,400 (F)
Direct wages (Rs.)	1,20,000	1,04,800	15,200 (F)
Variable overheads (Rs.)	40,000	37,600	2,400 (F)
Fixed overhead (Rs.)	<u>40,000</u>	<u>39,200</u>	800 (F)
Total Cost	<u>2,80,000</u>	<u>2,55,200</u>	

The Standard costs of the products are as follows:

	Per unit (Rs.)
Direct materials (1 kg. at the rate of Re. 1 per kg.)	1.00
Direct wages (1 hour at the rate of Rs. 1.50)	1.50
Variable overheads (1 hour at the rate of Re. .50)	0.50

Actual results for the month showed that 78,400 kg. of material were used and 70,400 labour hours were recorded.

Required:

- Prepare Flexible budget for the month and compare with actual results.
- Calculate material, labour, sales price, variable overhead and fixed overhead expenditure variances and sales volume (profit) variance.

(May 2008, 5 + 10 = 15 Marks)

Answer**(i) Statement showing flexible budget and its comparison with actual**

	<i>Master budget (80,000 units)</i>		<i>Flexible budget (at standard cost)</i>	<i>Actual for 72,000 units</i>	<i>Variance</i>
		<i>Per unit</i>	<i>72,000 units</i>		
A. Sales	3,20,000	4.00	2,88,000	2,80,000	8,000 (A)
B. Direct material	80,000	1.00	72,000	73,600	1,600 (A)
C. Direct wages	1,20,000	1.50	1,08,000	1,04,800	3,200 (F)
D. Variable overhead	40,000	0.50	36,000	37,600	1,600 (A)
E. Total variable cost	2,40,000	3.00	2,16,000	2,16,000	—
F. Contribution	80,000	1.00	72,000	64,000	—
G. Fixed overhead	40,000	0.50	40,000	39,200	800 (F)
H. Net profit	40,000	0.50	32,000	24,800	7,200 (A)

(ii) Variances:

- ◆ Sales price variance = Actual Quantity (Standard Rate – Actual Rate)
= 72,000 (4.00 – 3.89) = 8,000 (A)
- ◆ Direct Material Cost Variance = Standard Cost for actual output – Actual cost
= 72,000 – 73,600 = 1,600 (A)
- ◆ Direct Material Price Variance = Actual Quantity (Standard rate – Actual Rate)
= 78,400 $\left(1.00 - \left(\frac{73,600}{78,400}\right)\right)$ = 4,800 (F)
- ◆ Direct Material Usage Variance = Standard Rate (Standard Quantity – Actual Quantity)
= 1.0 (72,000 – 78,400) = 6,400 (A)
- ◆ Direct Labour Cost Variance = Standard Cost for actual output – Actual cost
= 1,08,000 – 1,04,800 = 3,200 (F)
- ◆ Direct Labour Rate Variance = Actual Hour (Standard Rate – Actual Rate)
= 70,400 $\left(1.5 - \left(\frac{1,04,800}{70,400}\right)\right)$ = 800 (F)

- ◆ Direct Labour Efficiency Variance = Standard Rate (Standard Hour – Actual Hour)

= 1.5 (72,000 – 70,400) = 2,400 (F)
- ◆ Variable Overhead Variance = Recovered variable overhead – Actual variable overhead

= (72,000 × 0.50) – 37,600 = 1,600 (A)
- ◆ Fixed Overhead Expenditure Variance = Budgeted fixed overhead – Actual fixed overhead

= 40,000 – 39,200 = 800 (F)
- ◆ Sales Volume (Profit) Variance = Standard rate of profit (Budgeted Quantity – Actual Quantity)

= .50 [80,000 – 72,000] = 4,000 (A)

Question 4

UV Ltd. presents the following information for November, 2008:

Budgeted production of product P = 200 units.

Standard consumption of Raw materials = 2 kg. per unit of P.

Standard price of material A = Rs. 6 per kg.

Actually, 250 units of P were produced and material A was purchased at Rs. 8 per kg and consumed at 1.8 kg per unit of P. Calculate the material cost variances.

(Nov 2008, 3 Marks)

Answer

- Actual production of P = 250 units
- Standard quantity of A for actual production = 2 × 250 = 500 kg. (SQ)
- Actual quantity of A for actual production = 1.8 × 250 = 450 kg. (AQ)
- Standard price / kg. of A = 6 Rs. (SP)
- Actual price / kg. of A = 8 Rs. (AP)

- (1) Total Material Cost Variance = (Standard Price $\times$ Standard Quantity)
– (Actual Price $\times$ Actual Quantity)
= (6 $\times$ 500) – (8 $\times$ 450)
= 3,000 – 3,600 = 600 (A)
- (2) Material Price Variance = (Standard price – Actual price) $\times$ Actual quantity
= (6 – 8) $\times$ 450 = 900 (A)
- (3) Material Usage Variance = (Standard quantity – Actual quantity) $\times$ Standard price
= (500 – 450) $\times$ 6 = 300 (F)

Question 5

The following information is available from the cost records of Vatika & Co. For the month of August, 2009:

Material purchased 24,000 kg Rs.1,05,600

Material consumed 22,800 kg

Actual wages paid for 5,940 hours Rs.29,700

Unit produced 2160 units.

Standard rates and prices are:

Direct material rate is Rs.4.00 per unit

Direct labour rate is Rs.4.00 per hour

Standard input is 10 kg. for one unit

Standard requirement is 2.5 hours per unit.

Calculate all material and labour variances for the month of August, 2009.

(November 2009, 8 Marks)

Answer

Material Variances:

(i) **Material Cost Variance**

$$= (SQ \times SP) - (AQ \times AP)$$
$$= (2,160 \times 4 \times 10) - (22,800 \times 4.40)$$
$$= \text{Rs.}86,400 - \text{Rs.}1,00,320 = 13,920 \text{ (A)}$$

- (ii) Material Price Variance
 $= AQ (SP - AP)$
 $= 22,800 \text{ Kg } (4 - 4.40) = 9,120 \text{ (A)}$
- (iii) Material Usage Variance
 $= SP (SQ - AQ)$
 $= 4 (21,600 - 22,800) = 4,800 \text{ (A)}$

Verification:-

$$MCV = MPV + MUV$$

$$13,920 \text{ (A)} = 9,120 \text{ (A)} + 4,800 \text{ (A)}$$

Labour Variances:

- (i) Labour Cost Variance
 $= (SH \times SR) - (AH \times AR)$
 $= (2,160 \times 2.50 \times 4) - (29,700)$
 $= 21,600 - 29,700 = 8,100 \text{ (A)}$
- (ii) Labour Rate Variance
 $= AH (SR - AR)$
 $= 5,940 (4 - 5) = 5,940 \text{ (A)}$
- (iii) Labour Efficiency Variance
 $= SR (SH - AH)$
 $= 4 (5,400 - 5,940) = 2,160 \text{ (A)}$

Verification:-

$$LCV = LRV + LEV$$

$$8,100 \text{ (A)} = 5,940 \text{ (A)} + 2,160 \text{ (A)}$$

$$SH = 2,160 \text{ Units} \times 2.50 \text{ Hours} = 5,400 \text{ Hrs.}$$