5. STANDARD COSTING

ASSIGNMENT SOLUTIONS

PROBLEM NO: 1

Material	Standard			Actuals		
	SQ	SP	SQ x SP	AQ	AP	AQ x AP
	50	1	50	45	0.8	36

M.C.V = (SQ x SP) - (AQ x AP) = 50 - 36 = 14(F)

PROBLEM NO: 2

Material	Standard (2,10,000 kg)			Actuals (2,10,000 kg)			
	SQ	SP	SQ x SP	AQ	AP	AQ x AP	AQ x SP
	For 70 kg output - 100 kg r/m For 2,10,000 kg output - ? 3,00,000 kg	1	3,00,000	2,80,000	0.9 $\left(\dfrac{2,52,000}{2,80,000}\right)$	2,52,000	2,80,000

M.U.V = SQ x SP - AQ x SP = Rs.3,00,000 - (Rs.2,80,000 x 1) = Rs.20,000 (F)

M.P.V = AQ x SP - AQ x AP = Rs.2,80,000 - Rs.2,52,000 = Rs.28,000(F)

M.C.V = SQ x SP - AQ x AP = Rs.3,00,000 - Rs.2,52,000 = Rs.48,000(F)

PROBLEM NO: 3

i) **Standard cost for Actual output:**

Material X = 1,500 units × 2,000 kg. × Rs. 1   = 30,00,000

Material Y = 1,500 units × 800 kg. × Rs. 1.50   = 18,00,000   Rs. 48,00,000

ii) **Material Cost Variance: Standard Cost for actual output - Actual Cost = (SQ × SP) - (AQ × AP)**

Material X = {30,00,000 - (31,00,000 kg. × Rs. 1.10)} = 30,00,000 - 34,10,000 = 4,10,000 (A)

Material Y = {18,00,000 - (12,50,000 kg. × Rs. 1.60)} = 18,00,000 - 20,00,000 = 2,00,000 (A)

= 6,10,000 (A)

iii) **Material Price Variance: AQ (SP - AP)**

Material X = 31,00,000 kg. (Rs. 1.00 - Rs. 1.10)   = 3,10,000 (A)

Material Y = 12,50,000 kg. (Rs. 1.50 - Rs. 1.60)   = 1,25,000 (A)   4,35,000 (A)

iv) **Material Usage Variance: SP (SQ - AQ)**

Material X = Rs. 1.00 {(1,500 × 2,000) - 31,00,000} = 30,00,000 - 31,00,000   = 1,00,000 (A)

Material Y = Rs. 1.50 {(1,500 × 800) - 12,50,000} = Rs. 1.50 (12,00,000 - 12,50,000) = 75,000 (A)

= 1,75,000 (A)

PROBLEM NO: 4

Particulars	Standards (365kg)				Actual (365kg)					
	SQ	SP	SQ x SP	AQ	AP	AQ x AP	AQ x SP	RSQ	RSQ x SP	
Mat A (35%)	134	25	3,350	125	27	3,375	3,125	140	3,500	
Mat B (65%)	250	36	9,000	275	34	9,350	9,900	260	9,360	
Input	384 kg		12,350	400 kg		12,725	13,025	400 kg	12,860	
Loss (5%)	19		35							
Out put	365		365							

M.C.V = SQ x SP - AQ x AP = Rs.12,350 - Rs.12,725 = Rs.375 (A)

M.P.V = AQ x SP - AQ x AP = Rs.13,025 - Rs.12,725 = Rs.300 (F)

M.M.V = RSQ x SP - AQ x SP = Rs.12,860 - Rs.13,025 = Rs.165 (A)

M.Y.V = SP x SQ - RSQ x SP = Rs.12,350 - Rs.12,860 = Rs.510 (A)

PROBLEM NO: 5

Working Notes:

a) Standard input = Actual output / 90% = 2,250 kg / 90%   = 2,500 kg.

Standard input of material- A 2,500 kg. x 40%   = 1,000 kg.

Standard input of material- B 2,500 kg. x 60%   = 1,500 kg.

b) Actual input = (Opening Stock + Purchases - Closing Stock)

Actual input of material- A (40 kg. + 800 kg. - 20 kg.)   = 820 kg.

Actual input of material- B (50 kg. + 1,800 kg. - 15 kg.)   = 1,835 kg.

Total actual input   2,655 kg.

c) Standard Cost

Material- A 1000 kg.@ Rs. 5.00 per kg   = Rs. 5,000

Material- B 1500 kg.@ Rs. 4.00 per kg   = Rs. 6,000

          Rs.11,000

d) Actual Cost

Material- A 40 kg. @ Rs. 5.00 per kg   = Rs. 200

780 kg. @ Rs. 6.00 per kg   = Rs. 4,680   = Rs. 4,880

Material- B 50 kg. @ Rs. 4.00 per kg   = Rs. 200

1,785 kg. @ Rs. 4.20 per kg   = Rs. 7,497   = Rs. 7,697

          Rs. 12,577

i) Material Price Variance = Actual Quantity (Std. Rate - Actual Rate)

Material- A = 40 kg (Rs. 5.00 - Rs. 5.00)   = Nil

780 kg (Rs. 5.00 - Rs. 6.00)   = Rs. 780 (A)

Material- B = 50 kg. (Rs. 4.00 - Rs. 4.00)   = Nil

1785 kg (Rs. 4.00 - Rs. 4.20)   = Rs. 357 (A)

          Rs. 1,137 (A)

ii) Material Usage Variance = Std. Rate (Standard Quantity - Actual Quantity)

Material- A = Rs. 5.00 (1,000 kg. - 820 kg)   = Rs. 900 (F)

Material- B = Rs. 4.00 (1,500 kg. - 1835 kg.)   = Rs.1,340 (A)

          Rs. 440 (A)

iii) Material Yield Variance = Std. Rate (Std. Quantity - Revised Std. Quantity)

Material- A = Rs. 5.00 (1,000 kg. - 2,655 x 40%)

          = Rs. 5.00 (1,000 kg. - 1,062 kg.)   = Rs. 310 (A)

Material- B = Rs. 4.00 (1,500 kg - 2,655 x 60%)

          = Rs. 4.00 (1,500 kg. - 1,593 kg.)   = Rs. 372 (A)

          Rs. 682 (A)

iv) Material Mix Variance = Std. Rate (Revised Std. Quantity - Actual Quantity)

Material- A = Rs. 5.00 (2,655 x 40% - 820 kg.)

          = Rs. 5.00 (1,062 kg. - 820 kg)   = Rs. 1,210 (F)

Material- B = Rs. 4.00 (2,655 x 60% - 1,835 kg.)

          = Rs. 4.00 (1,593 kg. - 1,835 kg.)   = Rs. 968 (A)

          Rs. 242 (F)

v) Material Cost Variance = Std. Cost - Actual cost

    = Rs. 11,000 - Rs. 12,577   = Rs. 1,577 (A)

PROBLEM NO: 6

Material	SQ* × SP	AQ** × SP	AQ** × AP	RSQ*** × SP
Vita-X	Rs. 2,75,000 (2,500 kg. × Rs. 110)	Rs. 3,30,000 (3,000 kg. × Rs.110)	Rs. 3,45,000 (3,000 kg. × Rs. 115)	Rs.2,62,460 (2,386 kg. × Rs. 110)
Proto-D	Rs. 4,80,000 (1,500 kg. × Rs. 320)	Rs. 4,00,000 (1,250 kg. × Rs. 320)	Rs. 4,12,500 (1,250 kg. × Rs. 330)	Rs. 4,58,240 (1,432 kg. × Rs. 320)
Mine-L	Rs. 6,90,000 (1,500 kg. × Rs. 460)	Rs. 4,60,000 (1,000 kg. × Rs. 460)	Rs. 4,05,000 (1,000 kg. × Rs. 405)	Rs. 6,58,720 (1,432 kg. × Rs. 460)
Total	Rs. 14,45,000	Rs. 11,90,000	Rs. 11,62,500	Rs. 13,79,420

* Standard Quantity of materials for actual output:

Vita-X	$= \dfrac{5\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 2,500\,Kgs.$
Proto-D	$= \dfrac{3\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 2,500\,Kgs.$
Mine-L	$= \dfrac{3\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 2,500\,Kgs.$

** Actual Quantity of Material used for actual output:

Vita-X	$= \dfrac{6\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 3,000\,Kgs.$
Proto-D	$= \dfrac{2.5\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 1,250\,Kgs.$
Mine-L	$= \dfrac{2\,Kgs.}{10\,Kgs.} \times 5,000\,Kgs. = 1,000\,Kgs.$

***Revised Standard Quantity (RSQ):

Vita-X	$= \dfrac{5\,Kgs.}{11\,Kgs.} \times 5,250\,Kgs. = 2,386\,Kgs.$
Proto-D	$= \dfrac{3\,Kgs.}{11\,Kgs.} \times 5,250\,Kgs. = 1,432\,Kgs.$
Mine-L	$= \dfrac{3\,Kgs.}{11\,Kgs.} \times 5,250\,Kgs. = 1,432\,Kgs.$

i) **Material Cost Variance** = (Std. Qty. × Std. Price) - (Actual Qty. × Actual Price)

    Or   = (SQ × SP) - (AQ × AP)

    Vita-X   = Rs. 2,75,000 - Rs. 3,45,000   = Rs. 70,000 (A)

    Proto-D   = Rs. 4,80,000 - Rs. 4,12,500   = Rs. 67,500 (F)

    Mine-L   = Rs. 6,90,000 - Rs. 4,05,000   = Rs. 2,85,000 (F)

                                                          = Rs. 2,82,500 (F)

ii) **Material Price Variance**   = Actual Quantity (Std. Price - Actual Price)

                                  = (AQ × SP) - (AQ × AP)

    Vita-X   = Rs. 3,30,000 - Rs. 3,45,000   = Rs. 15,000 (A)

    Proto-D   = Rs. 4,00,000 - Rs. 4,12,500   = Rs. 12,500 (A)

    Mine-L   = Rs. 4,60,000 - Rs. 4,05,000   = Rs. 55,000 (F)

                                                      = Rs. 27,500 (F)

iii) **Material Usage Variance** = Std. Price (Std. Qty. - Actual Qty.)

   Or   = (SQ × SP) - (AQ × SP)

   Vita-X   = Rs. 2,75,000 - Rs. 3,30,000 = Rs. 55,000 (A)

   Proto-D   = Rs. 4,80,000 - Rs. 4,00,000 = Rs. 80,000 (F)

   Mine-L   = Rs. 6,90,000 - Rs. 4,60,000 = Rs. 2,30,000 (F)

                     = Rs. 2,55,000 (F)

iv) **Material Mix Variance** = Std. Price (Revised Std. Qty. - Actual Qty.)

   Or   = (RSQ × SP) - (AQ × SP)

   Vita-X   = Rs. 2,62,460 - Rs. 3,30,000 = Rs. 67,540 (A)

   Proto-D   = Rs. 4,58,240 - Rs. 4,00,000 = Rs. 58,240 (F)

   Mine-L   = Rs. 6,58,720 - Rs. 4,60,000 = Rs. 1,98,720 (F)

                     = Rs. 1,89,420 (F)

v) **Material Yield Variance** = Std. Price (Std. Qty. - Revised Std. Qty.)

   Or   = (SQ × SP) - (RSQ × SP)

   Vita-X   = Rs. 2,75,000 - Rs. 2,62,460 = Rs. 12,540 (F)

   Proto-D   = Rs. 4,80,000 - Rs. 4,58,240 = Rs. 21,760 (F)

   Mine-L   = Rs. 6,90,000 - Rs. 6,58,720 = Rs. 31,280 (F)

                   = Rs. 65,580 (F).

PROBLEM NO: 7

Calculation of material variances:

(1) SP X SQ(w.n.1)	(2) SP X RSQ(w.n.2)	(3) SP X AQ	(4) AP X AQ
X: 15 X 600	15 X 615	15 X 640	17.50 X 640
Y: 20 X 800	20 X 820	20 X 950	18 X 950
Z: 25 X 1,000	25 X 1,025	25 X 870	27.50 X 870
50,000	51,250	50,350	52,225

Standard quantity = Standard quantity for actual production

SQ of X = 600 kgs $\begin{bmatrix} 1\,unit - 60\,kgs \\ 10\,units - ? \end{bmatrix}$

SQ of Y = 800 kgs $\begin{bmatrix} 1\,unit - 80\,kgs \\ 10\,units - ? \end{bmatrix}$

SQ of Z = 1,000 kgs $\begin{bmatrix} 1\,unit - 100\,kgs \\ 10\,units - ? \end{bmatrix}$

RSQ = AQ re written in standard mix

   = 2,460(640+950+870)

	X	Y	Z
MIX	6	8	10
Quantity	615	820	1,025

Variances:

Material cost variance = (1) - (4) = 2,225(A)

Material price variance = (3) - (4) = 1,875 (A)

Material usage variance	= (1) - (3)	= 350 (A)
Material mix variance	= (2) - (3)	= 900 (F)
Material yield variance	= (1) - (2)	= 1,250 (A)

PROBLEM NO: 8

	Standards (1000kg)				Actual (1000kg)			
	SQ	SP	SQ x SP	AQ	AP	AQ x AP	AQ x SP	RSQ
R/M A	800 kg $\left(\begin{array}{l}\text{for 10kg} - 8\text{kg} \\ \text{Output R/q} \\ \text{for 1000} - ?\end{array}\right)$	6	4,800	750	7	5,250	4,500	833
R/M B	400 kg $\left(\begin{array}{l}\text{for 10 kg} - 4\text{kg a R/M} \\ \text{for 1000} - ?\end{array}\right)$	4	1,600	500	5	2,500	2,000	417
	1,200 kgs.		6,400	1,250 kg		7,750	6,500	1,250 kg

M.C.V. = SQ x SP - AQ x AP = Rs.6,400 - Rs.7,750 = Rs.1,350 (A)

M.P.V. = AQ x SP - AQ x AP = Rs.6,500 - Rs.7,750 = Rs.1,250 (A)

M.U.V. = SQ x SP - AQ x SP = Rs.6,400 - Rs.6,500 = Rs.100 (A)

PROBLEM NO: 9

Standard and actual costs of material for actual output:

Material	SQ	SP (Rs.)	SQ × SP (Rs.)	AQ	AQ × AP (Rs.)	AQ × SP (Rs.)
A	31,000*	20	6,20,000	32,500	6,59,750	6,50,000
B	69,000**	10	6,90,000	67,000	6,83,400	6,70,000
	1,00,000		13,10,000	99,500	13,43,150	13,20,000

*Material A- 11,000 × 2 + 9,000 × 1 = 31,000 units

**Material B- 11,000 × 3 + 9,000 × 4 = 69,000 units

i) Material Price Variance = Actual Quantity (Std. Price - Actual Price)

 = AQ × SP - AQ × AP

 = 13,20,000 - 13,43,150 = 23,150 (Adverse)

ii) Material Usage Variance = Std. Price (Std. Qty. - Actual Qty.)

 = SP × SQ - SP × AQ

 = 13,10,000 - 13,20,000 = 10,000 (Adverse)

iii) Material Cost Variance = Std. Qty. × Std. Price - Actual Qty. × Actual Price

 = 13,10,000 - 13,43,150 = 33,150 (Adverse)

PROBLEM NO: 10

Standard			Actuals			
SH	SR	SH x SR	AH	AR	AH x AR	AH x SR
1000	0.5	500	900	0.4	360	450

L.C.V = SH x SR - AH x AR = Rs.500 - Rs.360 = Rs.140 (F)

L.E.V = SH x SR - AH x SR = Rs.500 - Rs.450 = Rs.50 (F)

L.R.V = AH x SR - AH x AR = Rs.450 - Rs.360 = Rs.90 (F)

PROBLEM NO: 11

SR - Standard labour Rate per Hour

AR - Actual labour rate per hour

SH - Standard Hours

AH - Actual hours

i) Actual labour rate per hour:

Labour rate Variance = AH (SR - AR)

= 17,094 (Rs.8 - AR) = 68,376 (A) = - 68,376

= Rs. 8 - AR = - 4 Or, AR = Rs. 12

ii) Standard hour required for 6,000 units:

Labour Efficiency $= \dfrac{SH}{AH} \times 100 = 105.3$

$= SH = \dfrac{AH \times 105.3}{100} = \dfrac{17,094 \, hours \times 105.3}{100} = 17,999.982$ or, SH = 18,000 hours

iii) Labour Efficiency Variance = SR (SH - AH) = Rs. 8 (18,000 - 17,094) = 8 × 906 = Rs. 7,248 (F)

iv) Standard Labour Cost per Unit $= \dfrac{18,000 \, hours \times Rs.8}{6,000 \, units} = Rs.24$

v) Actual Labour Cost per Unit $= \dfrac{17,094 \, hours \times Rs.12}{6,000 \, units} = Rs.34.19$

NOTE: Actual hours required: 17,094 hours (it is omitted in problem. Students have to consider it, while solving this problem)

PROBLEM NO: 12

Abnormal idle time	:	200 x ½ days = 100 men days
Actual time attended	:	200 x 50 days = 10,000 men days
Actual time worked	:	10,000 - 100 = 9,900 men days
Actual production	:	9,00,000 units

Standard requirements for actual production:

Material	:	9,00,000 units / 1,00,000 units = 9 tons or 9,000 kg.
Labour	:	9,00,000 / 100 = 9,000 men days

	(Rs.)
Material Price Variance (Standard price - Actual price) × Actual quantity	**(Rs.)**
(Rs. 20 - Rs. 21) × 10,000 kg.	10,000 (A)
Material Usage Variance (Standard usage - Actual usage) × Standard price	**(Rs.)**
(9,000 kg. - 10,000 kg.) × Rs. 20	20,000 (A)
Total material variance	30,000 (A)
Labour rate variance (Standard rate - Actual rate) × Actual man days attended	**(Rs.)**
(Rs. 6 - Rs. 6.50) × 10,000 hours	5,000 (A)
Labour efficiency variance (Standard man days - Actual man days worked) × Standard rate	
(9,000 - 9,900) × Rs.6	5,400 (A)
Idle time variance: Idle man days x Standard rate	**(Rs.)**
100 x Rs.6	600 (A)
Total labour variance	11,000 (A)

PROBLEM NO: 13

Working Note:

Table Showing Standard & Actual Cost

Worker	Standard Hours (a)	Standard Rate per Hour (b)	Standard Cost for Actual Output (c) = (a x b)	Actual Hours Paid (d)	Actual Rate per hour (e)	Actual Cost (f) = (d) x (e)	Idle time (g)	Actual hours worked (h) = (d) - (g)
Skilled	2,340 hrs. [(65 Workers x 40 hrs.)/ 2,000 units)] x1,800 units	Rs. 45	Rs.1,05,300	2,000 hrs. (50 Workers x 40 hrs.)	Rs. 50	Rs.1,00,000	100 hrs. (50 Workers x 2 hrs.)	1,900 hrs. (2,000 hrs.- 100 hrs.)
Semiskilled	720 hrs. [(20 Workers x 40 hrs.) / 2,000 units)] x1,800 units	Rs.30	Rs.21,600	1,200 hrs.				
(30 Workers x 40 hrs.)	Rs.35	Rs.42,000	60 hrs. (30 workers x 2 hrs.)	1,140 hrs. (1,200 hrs. - 60 hrs.)				
Unskilled	540 hrs. [(15 Workers x 40 hrs.)/ 2,000 units)] x1,800 units	Rs.15	Rs.8,100	800 hrs. (20 Workers x 40 hrs.)	Rs.10	Rs.8,000	40 hrs. (20 Workers x 2 hrs.)	760 hrs. (800 hrs. - 40 hrs.)
Total	3,600 hrs.		Rs.1,35,000	4,000 hrs.		Rs.1,50,000	200 hrs.	3,800 hrs.

Calculation of Variances:

i) Labour Cost Variance = Standard Cost for actual output - Actual cost

Skilled worker = Rs.1,05,300 - Rs.1,00,000 = Rs. 5,300 (F)

Semi-skilled worker = Rs. 21,600 - Rs.42,000 = Rs. 20,400 (A)

Unskilled Worker = Rs. 8,100 - Rs. 8,000 = Rs.100 (F)

Total = Rs.5,300 (F) + Rs.20,400 (A) + Rs.100 (F) = Rs.15,000 (A)

ii) Labour Efficiency Variance = Std. Rate x (Standard hours - Actual hours worked)

Skilled worker = Rs. 45 x (2,340 hrs. - 1,900 hrs.) = Rs.19,800 (F)

Semi-skilled worker = Rs. 30 x (720 hrs. - 1,140 hrs.) = Rs. 12,600 (A)

Unskilled Worker = Rs. 15 x (540 hrs. - 760 hrs.) = Rs. 3,300 (A)

Total = Rs.19,800 (F) + Rs.12,600 (A) + Rs.3,300 (A) = Rs.3,900 (F)

iii) Labour Idle Time Variance = Std. Rate x Idle Time (Hrs.)

Skilled worker = Rs. 45 x 100 hrs. = Rs. 4,500 (A)

Semi-skilled worker = Rs. 30 x 60 hrs. = Rs. 1,800 (A)

Unskilled worker = Rs. 15 x 40 hrs. = Rs. 600 (A)

Total = Rs. 4,500 (A) + Rs. 1,800 (A) + Rs. 600 (A) = Rs. 6,900 (A)

PROBLEM NO: 14

VOH Variances: (Hours Basis)

1	2	3
SH x SR	AHW x SR	AHW x AR
1,66,320 x 2.5 = 4,15,800	1,84,800 x 2.5 = 4,62,000	1,84,800 x 4.33 = 8,00,000

Standard Rate = $\dfrac{\text{Budgeted OverHeads}}{\text{Budgeted Hours}} = \dfrac{4,00,000}{1,60,000}$ = Rs. 2.5/hr.

Budgeted Hours = 20 x 8,000 = 1,60,000 Hours

Actual Hours worked = 22 x 8,400 = 1,84,800 Hours

Actual Rate = $\dfrac{\text{Actual OverHeads}}{\text{Actual Hours worked}} = \dfrac{8,00,000}{1,84,800}$ = Rs. 4.33/hr.

Actual Output = 1,84,800 x 1.80 = 3,32,640 units

Standard Hours = 1,66,320 hours $\begin{bmatrix} 1\,\text{hour} & & 2\,\text{units} \\ ? & & 3,32,640\,\text{units} \end{bmatrix}$

1 - 2 = VOH Efficiency Variance   = 46,200 (A)

2 - 3 = VOH Expenses Variance   = 3,38,000 (A)

1 - 3 = VOH Cost Variance   = 3,84,200 (A)

FOH variance (Hours Basis):

1	2	3	4	5
SH x BR	AHW x BR	RBH x BR	BH x BR	AHW x AR
1,66,320 x 5	1,84,800 x 5	1,76,000 x 5	1,60,000 x 5	1,84,800 x 4.54
8,31,600	9,24,000	8,80,000	8,00,000	8,40,000

Budgeted Rate = $\dfrac{\text{Budgeted OverHeads}}{\text{Budgeted Hours}} = \dfrac{8,00,000}{1,60,000}$ = 5.00/hr.

Actual Rate = $\dfrac{\text{Actual Overheads}}{\text{Actual Hours worked}} = \dfrac{8,40,000}{1,84,800}$ = 4.54

Revised Budgeted Hours = $\dfrac{\text{Actual days}}{\text{Budgeted days}}$ x Budgeted Hours = $\dfrac{22}{20}$ x 1,60,000 = 1,76,000 Hours

1 - 2 = FOH Efficiency Variance   = 92,400 (A)

2 - 3 = FOH Capacity Variance   = 44,000 (F)

3 - 4 = FOH Calendar Variance   = 80,000 (F)

1 - 4 = FOH Volume Variance   = 31,600 (F)

4 - 5 = FOH Expenditure Variance   = 40,000 (A)

1 - 5 = FOH Cost Variance   = 8,400 (A)

PROBLEM NO: 15

Calculation of Fixed OH Variance:

(1)	(2)	(3)	(4)	(5)
SR X SH	SR X AH	SR X RBH	SR X BH	AR X AH
1.50 X 22,000	-	-	1.50 X 20,000	31,000 (given)
33,000			30,000	

WORKING:

1. Standard Rate = Fixed OHRR per unit = $\dfrac{30,000}{20,000}$ = Rs. 1.50 per unit

Variances:

(i) FOH Volume Variance = (1) - (4) = 3,000 (F)

(ii) FOH Expenditure Variance = (4) - (5) = 1,000 (A)

(iii) FOH Cost Variance   = (1) - (5) = 2,000 (F)

PROBLEM NO: 16

FOH Variances

SH x SR	AHW x SR (or) AHW x BR	RBH x SR (or) RBH x BR	BH x SR (or) BH x BR	AHW x AR
21,000 x 0.5	22,000 x 0.5	20,000 x 0.5	20,000 x 0.5	22,000 x 0.54
Rs.10,500	Rs.11,000	Rs.10,000	Rs.10,000	Rs.12,000

$$SR = BR = \frac{BOH}{BH} = \frac{10,000}{20,000} = Rs.0.5$$

BH = 2000 x 10 = 20,000 hrs.

SH = 2,100 x 10 = 21,000 hrs.

$$\begin{pmatrix} 1 unit & - & 10hr \\ 2,100 & - & ? \end{pmatrix}$$

$$AR = \frac{AOH}{AH} = \frac{12,000}{22,000} = Rs.0.54$$

RBH = BH = 20,000 hrs.

1. FOH cost variance   = SH x SR - AH x AR   = 10,500 - 12,000 = Rs.1,500 (A)
2. FOH exp. variance   = BH x SR - AH x AR   = 10,000 - 12,000 = Rs.2,000 (A)
3. FOH volume variance   = SH x SR - BH x SR   = 10,500 - 10,000 = Rs.500 (F)
4. FOH Capacity variance   = AH x SR - RBH x SR   = 11,000 - 10,000 = Rs.1,000 (F)
5. FOH efficiency variance   = SH x SR - AH x SR   = 10,500 - 11,000 = Rs.500 (A)

PROBLEM NO: 17

Calculation of FOH Variances:

(1) SR X SH	(2) SR X AH	(3) SR X RBH	(4) SR X BH	(5) AR X AH
1 X 1,53,090	1 X 1,70,100	1 X 1,62,000	1,50,000 (Given)	1,56,000 (Given)
= 1,53,090	1,70,100	1,62,000		

Working note:

(1) Standard Rate $= \dfrac{Budgeted\ OH}{Budgeted\ hrs} = \dfrac{1,50,000}{(25\ days\ X\ 6,000)} = Rs.\ 1\ per\ hour$

(2) RBH   = BH for actual days worked = 1,62,000 $\begin{bmatrix} 25\ days & - & 1,50,000 \\ 27\ days & - & ? \end{bmatrix}$

Variances:

FOH Expenditure Variance=   (4) - (5)   =   6,000 (A)

FOH Volume Variance   =   (1) - (4)   =   3,090 (F)

FOH Cost Variance   =   (1) - (5)   =   2,910 (A)

PROBLEM NO: 18

1. **Material Cost Variance:**

     SP = 10

     SQ = 48,000 Kg $\begin{bmatrix} 1\ ut & -10\ kgs \\ 4,800 & - & ? \end{bmatrix}$

     a) SP X SQ   = 10 X 48,000   = 4,80,000

b) AP X AQ = (given) = 5,25,000

c) Material Cost Variance (a - b) = 45,000 (A)

2. **Labour Cost Variance:**

SR = 5.50

$$SH = 28,800 \text{ hrs} \begin{bmatrix} 1\text{ ut} & -6\text{ hrs} \\ 4,800 & - \quad ? \end{bmatrix}$$

a) SR X SH = 5.50 X 28,800 = 1,58,400

b) AR X AH = 1,55,000

c) Labour Cost Variance (a - b) = 3,400 (F)

3. **FOH Cost Variance:**

$$SR = \frac{Rs. 4,50,000}{30,000\,hrs} = Rs.\ 15\ per\ hour$$

a) SR X SH = 15 x 28,800 = 4,32,000

b) AR X AH = 4,70,000

c) FOH Cost Variance (a - b) = 38,000 (A)

4. **VOH Cost Variance:**

VOH Cost Variance = (SR X SH) - (AR X AH)

= (10 X 28,800) - (2,93,000) = 5,000 (A)

PROBLEM NO: 19

FOH Variance :- (HOURS BASIS)

SH×BR (1)	AHW×BR (2)	RBH×BR (3)	BH×BR (4)	AHW×AR (5)
1000 × 5	800 × 5	1200 × 5	1200 × 5	800×8
5000	4000	6000	6000	6400

$$BR = \frac{BOH}{BH} = \frac{6000}{1200} = Rs.5.$$

OH Volume Variances = 1 - 4 = 1000 (A)

SH x BR - 6000 = -1000

SH×BR = 5000

SH×5 = 5000

SH = 1000 hr.

OH Cost Variances = 1- 5 = 1400 (A)

SH x SR - AH x AR= -1400

1000 x 5 - AH x AR = - 1400

AH x AR = 6400

AH x 8 = 6400

AH = 800 hrs.

1. OH Exp Var = 4 - 5 = RS.400 (A)

2. Act OH = RS.6400

3. AHW = 800 hr.

4. OH Capacity Variance = 2 - 3 = 2000(A)

5. OH Efficiency Variance = 1 - 2 = 1000 (F)

6. SH = 1000 hr.

THE END