5.STANDARD COSTING

ASSIGNMENT SOLUTIONS

PROBLEM NO:1

Material	Standard (2,10,000 kg)			Actuals (2,10,000 kg)			
	SQ	SP	SQ x SP	AQ	AP	AQ x AP	AQ x SP
	3,00,000 kg [For 70 kg output - 100kg r/m For 2,10,000 kg output - ?]	1	3,00,000	2,80,000	0.9 (2,52,000 / 2,80,000)	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: 2

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: 3

Particulars	Standards (365 kg)			Actual (365 kg)					
	SQ	SP	SQ x SP	AQ	AP	AQ x AP	AQ x SP	RSQ	RSQ x SP
Mat A (35%)	134	25	3,350	425	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						

MASTER MINDS

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: 4

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

** Actual Quantity of Material used for actual output:

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

***Revised Standard Quantity (RSQ):

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

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

MASTER MINDS

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.) = (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.) = (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.) = (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: 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

MASTER MINDS

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 price variance=3-4

51,000 =AQXSP-AQXAP

=AQ(SP-AP)

=AQX5

AQ=51000/5 =10200 U

AQXAP =5,14,000

10,200XAP =5,14,000

AP =50.39

SP =50.39+5= Rs.55.39

SQ=2000 unitsx3kgs

=6000kg

Material usage variance=1-3

=SQXSP-AQXSP

=SP(SQ-AQ)

=55.39(6000-10200)

=2,32,638 A

Material cost variance=1-4

=SQXSP-AQXAP

=(6000X55.39)-5,14,000

=1,81,660 A

MASTER MINDS

PROBLEM NO: 7

Calculation of material variances:

(1)	(2)	(3)	(4)
SP x SQ (W.N.1)	**SP x RSQ (W.N.2)**	**SP x AQ**	**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 $\begin{bmatrix}1\text{unit}-60\text{kgs}\\10\text{units}-?\end{bmatrix}$

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

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

RSQ = AQ are 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

Particulars	1	2	3	4	5
	SHXSR	RSHXSR	AHPXSR	AHPXSR	AHWXAR
SKILLED	900X5	875X5	30X35X5	30X35X5	30X35X6
SEMI SKILLED	360X4	350X4	10X35X4	10X35X4	10X35X7
UN SKILLED	540X3	525X3	10X35X3	10X35X3	10X35X4
	7,560	7,350	7,700	7,700	10,150

MASTER MINDS

VARIANCES:

Labour yield variance	1-2	SHXSR- RSHXSR	7560-7350=210F
Labour mix variance	2-3	RSHXSR- AHPXSR	7350-7700=350A
Labour efficiency variance	1-3	SHXSR- AHPXSR	7560-7700=140A
Labour idle time variance	3-4	AHPXSR- AHPXSR	7700-7700=NIL
Labour rate variance	4-5	AHPXSR- AHWXAR	7700-10150=2450A
Labour cost variance	1-5	SHXSR- AHWXAR	7560-10150=2590A

WORKING NOTE:

Actual workers = 30+10+10=50

Actual hours worked = 50W x35

= 1750h

Standard hours in standard mix = 25:10:15,1800hours

Skilled=900,semi skilled = 360,un skilled=540

Actual hours worked in standard mix:

Revised standard mix

Skilled = 1750x25/50=875hours

Semi skilled = 1750x10/50=350hours

Un skilled = 1750x15/50=525hours

PROBLEM NO: 9

Particulars	1	2	3	4	5
	SHXSR	RSHXSR	AHWXSR	AHPXSR	AHPXAR
SKILLED	5X57.14X24	5X54.88X24	5X54.88X24	5X56X24	5X56X30
SEMI SKILLED	10X57.14X24	10X54.88X24	10X54.88X24	10X56X24	10X56X24
UN SKILLED	20X57.14X24	20X54.88X24	20X54.88X24	20X56X24	20X56X18
	48,000	**46,100**	**46,100**	**47,040**	**42,000**

VARIANCES:

Labour yield variance	1-2	SHXSR- RSHXSR	48,000-46,100=1900(F)
Labour mix variance	2-3	RSHXSR- AHPXSR	46,100-46,100=NIL
Labour efficiency variance	1-3	SHXSR- AHPXSR	48,000-46,100=1900(F)
Labour idle time variance	3-4	AHPXSR- AHPXSR	46,100-47,040=940(A)
Labour rate variance	4-5	AHPXSR- AHWXAR	47,040-42,000=5040(F)
Labour cost variance	1-5	SHXSR- AHWXAR	48,000-42,000=6000(F)

WORKING NOTE:

1) Actual hours worked = 56h-56x2% = 54.88h

2)SH = standard hours for actual production

= 400 chairs/7 chairs p.h = 57.14h

3)Total no. of workers = 5+10+20 = 35 workers

PROBLEM NO: 10

Standard time allowed for 2500 units

MASTER MINDS

Particulars	Amt.	Amt.
Skilled	35x25	875
Semi skilled	35x10	350
Un skilled	35x20	700
		1925

Standard time allowed for actual output:

Particulars	Amt.	Amt.
Skilled	$\frac{875}{2500}$ x2000	700
Semi skilled	$\frac{350}{2500}$ x2000	280
Un skilled	$\frac{700}{2500}$ x2000	560

Particulars	1	2	3	4	5
	SHXSR	RSHXSR	AHXAR	AHXSR	APHXSR
SKILLED	700x50	750x50	1050x50	1050x50	900x50
SEMI SKILLED	280x60	300x60	525x60	525x60	450x60
UN SKILLED	560x40	600x40	350x40	350x40	300x40
	78,400	**79,500**	**99,750**	**98,000**	**84,000**

Idle time:

Skilled	5x30 = 150
Semi skilled	5x15 = 75
Un skilled	5x10 = 50

Actual production hours

Skilled 1050-150 = 900

Semi skilled 525-75 = 450

Un skilled 350-50 = 300

Revised standard hours:1050+525+350

Skilled:

$$\frac{700}{1540} x1650 = 750$$

Semi-skilled:

$$\frac{280}{1540} x1650 = 300$$

Un skilled:

$$\frac{560}{1540} x1650 = 600$$

Labour cost variance	1-5	SHXSR- AHWXAR	74200-84000=9,800 A
Labour rate variance	4-5	AHWXSR- AHXAR	84000-99750=15,750 A
Labour efficiency variance	1-3	SHXSR- AHPXSR	74200-98000=23,800 A
Labour mix variance	2-3	RSHXSR- AHPXSR	79500-98000=18,500 A
Labour idle time variance	3-4	AHPXSR- AHXSR	98000-84000=14,000 F

PROBLEM NO: 11

MASTER MINDS

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 $= \frac{SH}{AH} x100 = 105.3$

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

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 $= \frac{18{,}000 \text{hours} \times Rs.8}{6{,}000 \text{ units}} = Rs.24$

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

PROBLEM NO: 12

Actual production =25,000Units

Standard hours for actual production=5000H $\begin{bmatrix} 12U & 25hours \\ 2400U & 5000 \end{bmatrix}$

Particulars	SHXSR (10:5:10)	RSHXSR (10:5:10)	AHWXSR	AHPXSR	AHPXAR
Skilled	2000x50	1800x50	4.625x180x50	4.625x200x50	4.625x200x70
Semi skilled	1000x60	900x60	9.25x180x60	9.25x200x60	9.25x200x90
Un skilled	2000x70	1800x70	11.125x180x70	11.125x200x70	11.125x200x50
	3,00,000	**2,70,000**	**2,81,700**	**3,13,000**	**6,55,500**

Let x be the no.of semi skilled workers

Skilled workers=2x X 200 =400x

Semi skilled =1x X 200=200x

Un skilled =(25-3x)x200 =5000-600x

Actual hours worked=(200-20)x25=4500

Labour mix variance=RSHXSR-AHWXSR

$$-21{,}600 = 27{,}000 - \begin{bmatrix} 2x \times 180 \times 70 + \\ x \times 180 \times 90 + \\ (25-3x) \times 180 \times 50 \end{bmatrix}$$

-21,600 =27000-(25200x+16200x+225000-27000x)

-21,600 = 270000-(14400x+225000)

X =4.625

No.of workers:

Semi skilled=4.625

Skilled =4.625x2=6.25

Un skilled=11.125(25-4.625-9.25)

i) Actual no of workers:

skilled=4.625

semi skilled=9.25

un skilled=11.125

ii) labour rate variance=AHPXSR-AHWXAR

=2,81,700-6,55,500

=3,73,800A

III) Labour yield variance=SHXSR-RSHXSR

=3,00,000-2,70,000

=30000F

IV) labour efficiency variance= SHXSR-AHPXSR

=3,00,0000-3,13,000

=13,000A

MASTER MINDS

PROBLEM NO: 13

Material price variance=3-4

=AQXSP-AQXAP

=AQ(SP-AP)

A	20,000(5-4)	20,000F
B	18,000(7-3)	72,000F
C	50,000(2-3)	50,000F
		1,42,000 F

Material usage variance=1-3

=SQXSP-AQXSP

=SP(SQ-AQ

A	5(5,000X4-20,000)	NIL
B	7(5,000X3-30,000)	1,05,000A
C	2(5,000X5-50,000)	50,000A
		1,55,000 A

Labour rate variances = 4-5

= AHPXSR-AHPXAR

= AHP(SR-AR)

= 20,000(8-8)

= NIL

Labour efficiency variance = 1-3

= SHXSR- AHPXSR

= (5000X3X8)-(20,000X8)

= 120000-160000

=40000A

MASTER MINDS

PROBLEM NO: 14

MATERIAL VARIANCE:

Materials	1	2	3	4
	SHXSR	RSHXSR	AHWXSR	AHWXAR
Material – A	1214.28 x 30	1142.85 x 30	1200 x 30	1200 x 43
Material – B	910.72 x 50	857.15 x 50	800 x 50	800 x 32.5
	81,964.4	**77,143**	**76,000**	**77,600**

(1 – 2)SHXSR- RSHXSR	Material Yield Variance	4821.4 (F)
(2 – 3) RSHXSR- AHWXSR	Material Mix Variance	1143 (F)
(1 – 3) SHXSR- AHWXSR	Material Usage Variance	5964.4 (F)
(3 – 4) AHWXSR- AHWXAR	Material Price Variance	1600 (A)
(1 – 4) SHXSR - AHWXAR	Material Cost Variance	4364.4 (F)

WORKING NOTE : 2

Particulars		Given quantity	Standard quantity	Actual quantity	RSQ(8:6)
Material – A		800	1214.28	1,200	1142.85
Material – B		600	910.72	800	857.15
	Input	1,400	2125 (W.No3)	2,000	2000

	(–) Loss 20%	280	425	300	
	Output	**1,120**	**1,700**	**1,700**	

WORKING NOTE : 3 1400 (Input) ------ 1120 (Output)

? (2125) ------- 1700 (Output)

LABOUR VARIANCE:

Actual production: 1700 kg

Standard hours for Act. Prod skilled = $1366.07\left[\frac{1700x900}{1120}\right]$

Unskilled = $1092.85\left[\frac{1700x720}{1120}\right]$

Revised standard hour worked in standard mix

Actual that hours worker = 1200 + 860 = 2,060

Standard Mix = 1,000 – 800 = 10:08

Revised standard skilled = $\left[\frac{2,060}{18}x10\right]$ = 1,144.4

Unskilled = $\left[\frac{2,060}{18}x8\right]$ = 915.5

Labour cost variance = 1 – 5

= SH X SR – AHR X AP = $\begin{bmatrix}1366.07\ x40\\+1092.85x30\end{bmatrix}$ - $\begin{bmatrix}1,200x35.5\\+\ 860x23\end{bmatrix}$

= 25048.30 (F)

Labour Efficiency variance = 1 – 3

= SH X SR – AHW X SR

Skilled / Unskilled $\begin{bmatrix}1366.07\ x40\\+1092.85x30\end{bmatrix}$ – $\begin{bmatrix}1,200.8x40\\+860x30\end{bmatrix}$ = 13596.3 (F)

Labour Yield variance = (1 – 2)SH X SR – RSH X SR

Skilled / Unskilled $\begin{bmatrix}1366.07x40+\\1092.85x30\end{bmatrix}$ – $\begin{bmatrix}1,144.4x40+\\915.6x30\end{bmatrix}$

= 14184.3 (F)

PROBLEM NO: 15

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 = $\frac{\text{Budgeted OverHeads}}{\text{Budgeted Hours}} = \frac{4,00,000}{1,60,000}$ = 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 = $\frac{\text{Actual OverHeads}}{\text{Actual Hours worked}} = \frac{8,00,000}{1,84,800}$ = 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 = $\frac{\text{Budgeted OverHeads}}{\text{Budgeted Hours}} = \frac{8,00,000}{1,60,000}$ = Rs. 5.00/hr.

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

Revised Budgeted Hours = $\frac{\text{Actual days}}{\text{Budgeted days}}$ x Budgeted Hours = $\frac{22}{20}$ 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)

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PROBLEM NO: 16

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 = $\frac{30,000}{20,000}$ = 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: 17

Workings:

1. Budgeted Hours = $\frac{\text{Rs.30,000}}{\text{Rs.1 per hour}}$ = 30,000 hours
2. Standard Fixed Overhead rate per hour (Standard Rate):

$$\frac{\text{Budgeted fixed overheads}}{\text{Budgeted Hours}} = \frac{\text{Rs.30,000}}{\text{30,000 hours}} = \text{Rs.1.00}$$

3. Standard Hour per unit of output = $\frac{\text{30,000 hours}}{\text{20,000 hours}}$ = 1.5 hours
4. Standard hours for Actual Output= 22,000 units × 1.5 hours = 33,000 Hours
5. Budgeted Overhead per day for budgeted days = $\frac{\text{Rs.30,000}}{\text{25 days}}$ = Rs.1,200
6. Budgeted Overhead for actual days worked = .1,200 × 27 days = Rs. 32,400
7. Budgeted Hours for Actual days worked = $\frac{\text{30,000 hours}}{\text{25 days}} \times 27\text{days}$ =32,400 hours

Computation of Variances in relation to Fixed Overheads:

i) Efficiency Variance

= Standard Rate × (Standard hours for actual output - Actual hours worked)

= Rs.1.00 (33,000 hours - 31,500 hours) = Rs.1,500 (Favourable)

ii) Capacity Variance:

= Standard Rate × (Actual Hours - Budgeted Hours for actual days worked)

= Rs.1.00 (31,500 hours - 32,400 hours) = Rs.900 (Adverse)

iii) Calendar Variance

= Standard Fixed Overhead Rate per day × (Actual Working days - Budgeted working days)

= Rs.1,200 (27 days - 25 days) = Rs.2,400 (Favourable)

iv) Volume Variance

= Standard Rate × (Standard hours - Budgeted hours)

= Rs. 1.00 (33,000 hours - 30,000 hours) = Rs.3,000 (Favourable)

v) Expenditure Variance

= Budgeted Overheads - Actual Overheads

= Rs. 30,000 - Rs. 31,000 = Rs.1,000 (Adverse)

Note: Overhead Variances may also be calculated based on output.

PROBLEM NO: 18

Standard rate per (variable)= $\frac{\text{Budgeted VOH}}{\text{Budgeted units}} = \frac{10000}{5000} = 2$

Standard rate per (fixed)= $\frac{\text{Budgeted VOH}}{\text{Budgeted units}} = \frac{50000}{5000} = 10$

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a) VOH cost variance = 1-3

= SHXSR-AHXAR

= 4000X2-10000

= 8000-13000

= 5000A

b) FOH cost variance = 1-5

= SHXSR- AHWXAR

= AOXSR-AOXAR

= 4000X10-40000

= NIL

i) FOH expense variance = 4-5

= BHXSR- AHXAR

= BOXSR-AOXAR

= 5000X10-40000

= 50000-40000

= 10000F

II) FOH volume variance = 1-4

= SHXSR-BHXSR

= (AO-BO)XSR

= (4000-5000)10

= 10000A

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PROBLEM NO: 19

Production volume variance = 1-4

= SHXSR-BHXSR

= AOXSR-BOXSR

= (AO-BO)SR

= 3,50,000A

Overhead expense variance = [(AHXSR)+(BHXSR)-(AHXAR)+(AHXAR)]

= [(SOXSR)+(BOXSR)-(AOXAR)]

= [(100X1300)+(200X3500)-9,75,000]

= 8,30,000-9,75,000

= 1,45,000A

NOTE: Assume SO=AO if information is not given.

PROBLEM NO: 20

a) Material price variance:

= (Standard price - Actual Price) × Actual quantity

= (Rs. 4 - Rs. 4.10) × 5,000 = Rs. 500 A.

b) Material usage variance:

= (Std. quantity for actual output - Actual qty.) × Std. price

= (600 × 5 - 3,500) × 4 = Rs. 2,000 A.

c) Labour Rate Variance:

= (Standard rate - Actual rate) × Actual hours

= (Rs.10 - Rs.9) × 1,700 = Rs. 1,700 F.

d) Labour Efficiency Variance:

= (Standard hours for actual output - Actual hours) × Standard rate

= (600 × 3 - 1,700) × Rs.10 = Rs.1,000 F.

e) Variable Overhead Expenditure Variance:

= (Actual Hours × Standard Rate) - Actual Overhead

= (1,700 ×Rs.1) - Rs.1,900 = Rs.200 Adv.

f) Variable Overhead Efficiency Variance:

= Std. hours for actual output - Actual hours) × Std. rate

= (600 × 3 - 1,700) × Rs.1 = Rs.100 F.

g) Fixed Overhead Expenditure Variance:

= (Budgeted overhead - Actual overhead)

= (1,800 × 0.50 - 900) = Nil

h) Fixed Overhead Volume Variance:

= (Std. hours for actual output - Budgeted hours) × Std. rate

= (600 × 3 - 1,800) × Rs. 0.50 = Nil

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i) Fixed Overhead Capacity Variance:

= (Budgeted hours - Actual Hours) × Standard rate

= (1,800 - 1,700) × Rs.0.50 = Rs.50 Adv.

j) Fixed Overhead Efficiency Variance:

= (Std. hours for actual output - Actual hours) × Standard rate

= (600 × 3 - 1,700) × Rs.0.50 = Rs.50 F.

Verification:	Amount (in Rs.)	Amount (in Rs.)
Overhead recovered: 600 units @ Rs.4.50		2,700
Actual Overhead:		
Variable	1,900	
Fixed	900	2,800
		100 A.
Variable expenditure variance		200 A
Variable Efficiency variance		100 F.
Fixed expenditure variance		Nil
Fixed overhead volume variance		Nil
		100 Adv.

Reconciliation Statement:

Standard Cost: 600 units @ R.54.50		32,700	

Actual Cost:	38,600		
Less: Material Stock at standard cost: (1,500 × Rs.4)	6,000	(32,600)	100 F.
Variances:	**Adverse. (Rs.)**	**Favorable. (Rs.)**	
Material price	500		
Material usage	2,000		
Labour rate		1,700	
Labour efficiency		1,000	
Variable expenditure	200		
Variable efficiency		100	
Total	2,700	2,800	100 F.

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To **MASTER MINDS**, Guntur

THE END

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