

Basic Concepts

Standard Costing	Standard costing is a method of costing which measure the performance or an activity by comparing actual cost with standard cost, analyses the variances and reporting of variances for investigation.
Standard Cost	It is a planned unit cost of the product, component or service produced in a period.
Standard Price	A predetermined price fixed on the basis of a specification of a product or service and of all factors affecting that price.
Standard Time	The total time in which task should be completed at standard performance.
Variance	A divergence from the predetermined rates, expressed ultimately in money value, generally used in standard costing and budgetary control systems.
Variance Analysis	The analysis of variances arising in standard costing system into their constituent parts.
Ideal Standards	These represent the level of performance attainable when prices for material and labour are most favourable, when the highest output is achieved with the best equipment and layout and when the maximum efficiency in utilization of resources results in maximum output with minimum cost.
Normal Standards	These are standards that may be achieved under normal operating conditions.
Basic or Bogey Standards	These standards are used only when they are likely to remain constant or unaltered over a long period.

Current Standard		These standards reflect the management anticipation of what actual cost will be for the current period.
Controllable Variances		Controllable variances are those which can be controlled by the department heads. Responsibility centres are answerable for the all adverse variances.
Un-controllable Variances		These variances are arising from the conditions which are beyond the control of the concerned department.
Favourable Variance		Variances which are profitable for the organisation are known as favourable variance.
Adverse Variance		Variances which increase the cost for the organisation are known as adverse variance.
Material Variance	Cost	This is the difference between standard material cost for the actual output and actual cost incurred.
Material Variance	Price	It measures variance arises in the material cost due to difference in actual material purchase price from standard material price.
Material Variance	Usage	It measures the variance in material cost due to usage/ consumption of materials.
Material Variance	Mix	Variance in material consumption which arise due to difference in proportion actually used from the set standard proportion. It arises only when two or more inputs are used to produce a product.
Material Variance	Yield	Variance in material consumption which arises due to yield or productivity of the inputs. It may arise due to use of sub standard quality of materials or inefficiency or workers or due to wrong processing.
Labour Variance	Cost	This is difference between the standard labour costs for actual hours worked and actual wages paid.
Labour Variance	Rate	This arises due to the difference in actual rate paid from the standard rate.

11.3 Cost Accounting

Labour Efficiency Variance	Labour efficiency variance is the difference between the actual hours worked by the worker and the standard hours required to produce the actual quantity.
Labour Mix/ Gang Variance	Labour efficiency variance which arises due to change in the proportion or combination or different skills set.
Labour Yield Variance	Labour efficiency variance which arises due to the productivity of workers from the set standard productivity.
Idle Time Variance	It is calculated for the unproductive labour hours.
Variable Overhead Cost Variance	This is the difference between the actual variable overhead paid and the standard variable overhead.
Variable Overhead Expenditure Variance	This is difference between the actual rate of variable overhead and standard variable overhead rate.
Variable Overhead Efficiency Variance	This is the difference between the actual hours worked and standard hours required for the actual volume of work.
Fixed Overhead Cost Variance	This is the difference between the actual fixed overhead incurred and absorbed fixed overhead.
Fixed Overhead Expenditure Variance	This the difference between the actual fixed overhead incurred and budgeted fixed overhead.
Fixed Overhead Volume Variance	Variance in fixed overhead which arises due to the volume of production.
Fixed Overhead Efficiency Variance	This is the difference between the actual hours worked and the standard hours required.
Fixed Overhead Capacity Variance	This is the difference between the budgeted capacity and the actual hours worked.
Fixed Overhead Calendar Variance	This is the difference between the actual number of days and budgeted number of working days.

Basic Formulae Material Variances

Material Cost Variance [Standard Cost – Actual Cost]
(The difference between the <u>Standard Material Cost of the actual production volume</u> and the <u>Actual Cost of Material</u>)
$[(SQ \times SP) - (AQ \times AP)]$

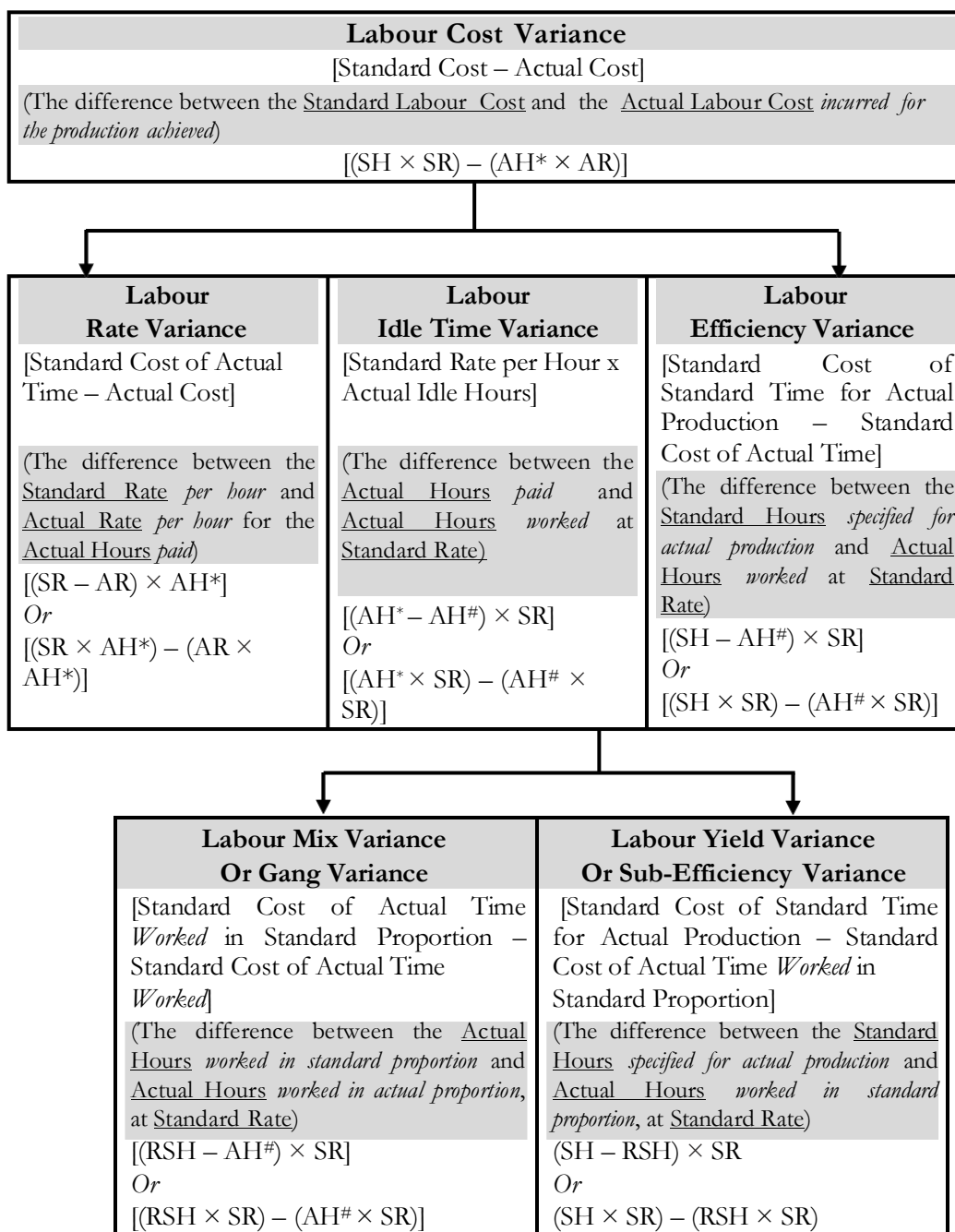
Material Price Variance [Standard Cost of Actual Quantity – Actual Cost] (The difference between the <u>Standard Price</u> and <u>Actual Price</u> for the <u>Actual Quantity Purchased</u>) $[(SP - AP) \times AQ]$ Or $[(SP \times AQ) - (AP \times AQ)]$	Material Usage Variance [Standard Cost of Standard Quantity for Actual Production – Standard Cost of Actual Quantity] (The difference between the <u>Standard Quantity specified for actual production</u> and the <u>Actual Quantity used, at Standard Price</u>) $[(SQ - AQ) \times SP]$ Or $[(SQ \times SP) - (AQ \times SP)]$
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Material Mix Variance [Standard Cost of Actual Quantity in Standard Proportion – Standard Cost of Actual Quantity] (The difference between the <u>Actual Quantity in standard proportion</u> and <u>Actual Quantity in actual proportion, at Standard Price</u>) $[(RSQ - AQ) \times SP]$ Or $[(RSQ \times SP) - (AQ \times SP)]$	Material Yield Variance [Standard Cost of Standard Quantity for Actual Production – Standard Cost of Actual Quantity in Standard Proportion] (The difference between the <u>Standard Quantity specified for actual production</u> and <u>Actual Quantity in standard proportion, at Standard Purchase Price</u>) $[(SQ - RSQ) \times SP]$ Or $[(SQ \times SP) - (RSQ \times SP)]$
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Note:

- SQ = Standard Quantity = Expected Consumption for Actual Output
- AQ = Actual Quantity of Material Consumed
- RSQ = Revised Standard Quantity = Actual Quantity Rewritten in Standard Proportion
- SP = Standard Price per Unit
- AP = Actual Price per Unit

Labour Variances



<p>Alternate Formula [Total Actual Time <i>Worked</i> (hours) × {Average Standard Rate per hour of Standard Gang <u>Less</u> Average Standard Rate per hour of Actual Gang@}] @ on the basis of hours worked</p>	<p>Alternate Formula [Average Standard Rate per hour of Standard Gang × {Total Standard Time (hours) <u>Less</u> Total Actual Time <i>Worked</i> (hours)}]</p>
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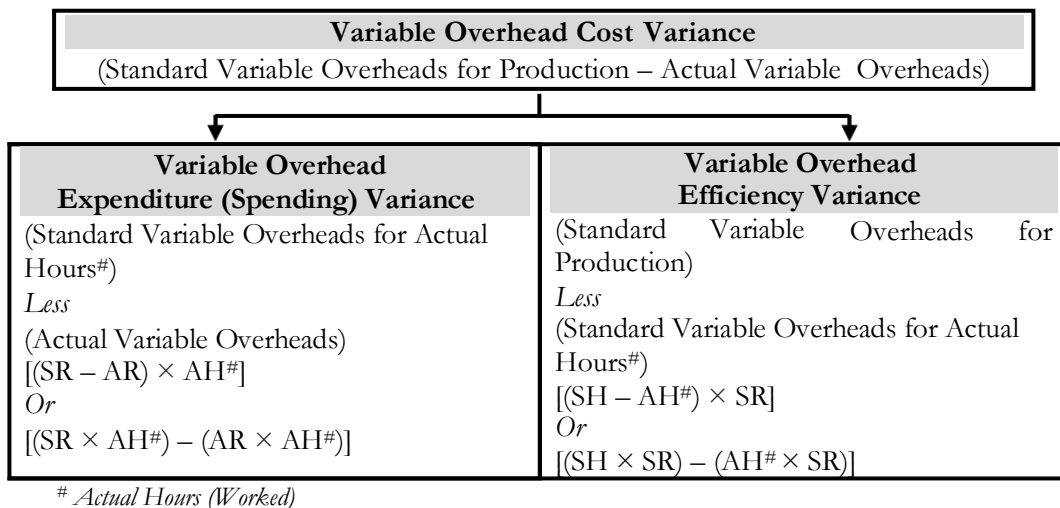
Note:
 SH = Standard Hours = Expected time (Time allowed) for Actual Output
 AH* = Actual Hours *paid for*
 AH# = Actual Hours *worked*
 RSH = Revised Standard Hours = Actual Hours (worked) rewritten in Standard Proportion
 SR = Standard Rate per Labour Hour
 AR = Actual Rate per Labour Hour Paid
In the absence of idle time: Actual Hours Worked = Actual Hours Paid



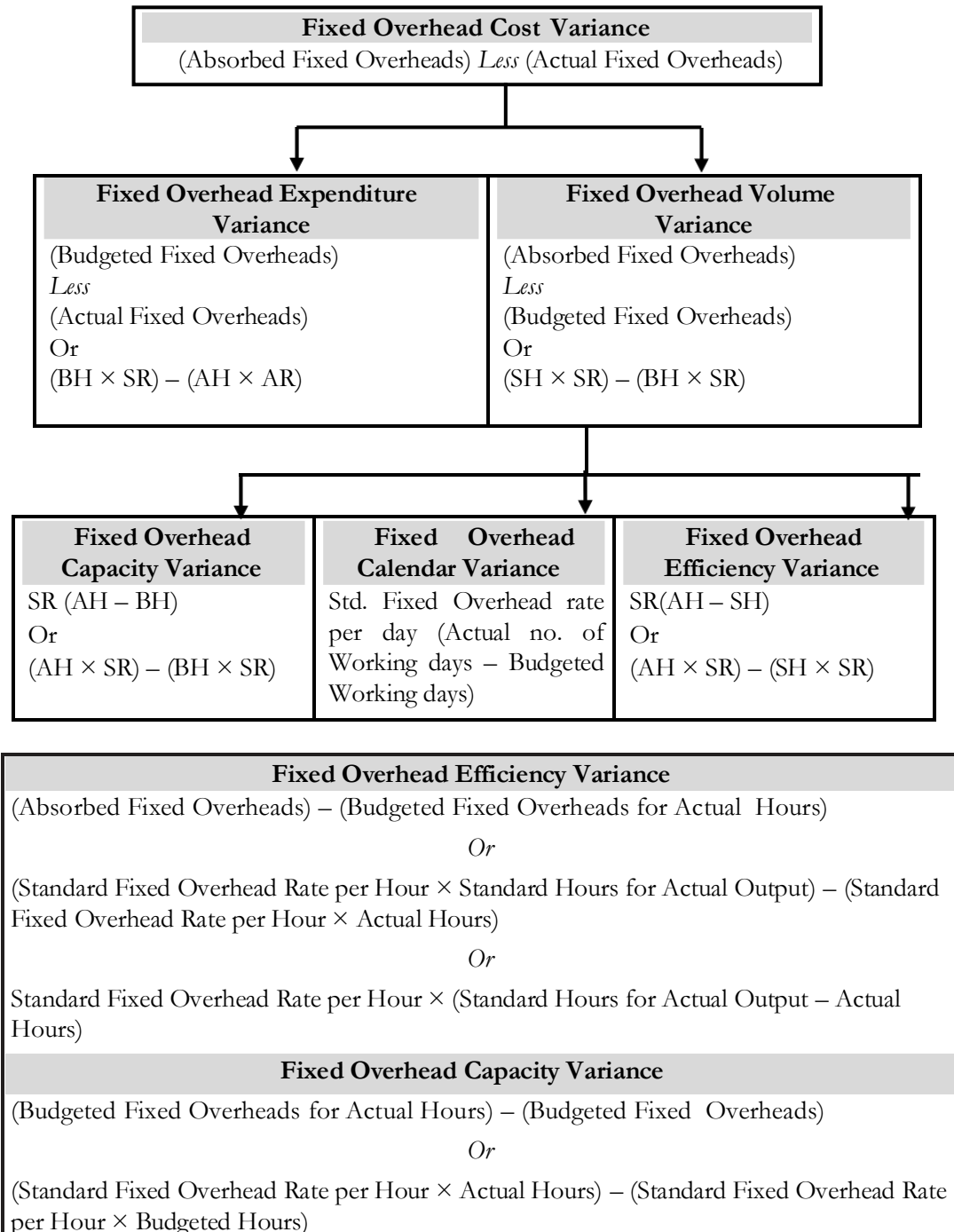
Idle Time is a period for which a workstation is available for production but is not used due to e.g. shortage of tooling, material or operators. During Idle Time, Direct Labour Wages are being paid but no output is produced. The cost of this can be identified separately in an Idle Time Variance, so that it is not 'hidden' in an adverse Labour Efficiency Variance.

Some organizations face Idle Time on regular basis. In this situation the Standard Labour Rate may include an allowance for the cost of the expected idle time. Only the impact of any unexpected or abnormal Idle Time would be included in the Idle Time Variance.

Variable Overhead Variances



Fixed Overhead Variances



<p><i>Or</i></p> <p>Standard Fixed Overhead Rate per Hour × (Actual Hours – Budgeted Hours)</p>

Fixed Overhead Volume Variance (when rate per unit is given)
<p>(Absorbed Fixed Overheads) – (Budgeted Fixed Overheads)</p> <p style="text-align: center;"><i>Or</i></p> <p>(Standard Fixed Overhead Rate per Unit × Actual Output) – (Standard Fixed Overhead Rate per Unit × Budgeted Output)</p> <p style="text-align: center;"><i>Or</i></p> <p>Standard Fixed Overhead Rate per Unit × (Actual Output – Budgeted Output)</p>

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Sales Variances (Turnover or Value)

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SECTION-A

Question-1

Describe three distinct groups of variances that arise in standard costing.

Solution:

The three distinct groups of variances that arise in standard costing are:

- (i) Variances of efficiency. These are the variance, which arise due to efficiency or inefficiency in use of material, labour etc.
- (ii) Variances of prices and rates: These are the variances, which arise due to changes in procurement price and standard price.

- (iii) Variances due to volume: These represent the effect of difference between actual activity and standard level of activity.
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Question-2

“Calculation of variances in standard costing is not an end in itself, but a means to an end.”
Discuss.

Solution:

The crux of standard costing lies in variance analysis. Standard costing is the technique whereby standard costs are predetermined and subsequently compared with the recorded actual costs. It is a technique of cost ascertainment and cost control. It establishes predetermined estimates of the cost of products and services based on management's standards of efficient operation. It thus lays emphasis on “what the cost should be”. These should be costs are when compared with the actual costs. The difference between standard cost and actual cost of actual output is defined as the variance.

The variance in other words is the difference between the actual performance and the standard performance. The calculations of variances are simple. A variance may be favourable or unfavourable. If the actual cost is less than the standard cost, the variance is favourable but if the actual cost is more than the standard cost, the variance will be unfavourable. They are easily expressible and do not provide detailed analysis to enable management of exercise control over them. It is not enough to know the figures of these variances from month to month. We in fact are required to trace their origin and causes of occurrence for taking necessary remedial steps to reduce / eliminate them.

A detailed probe into the variance particularly the controllable variances helps the management to ascertain:

- (i) the amount of variance
- (ii) the factors or causes of their occurrence
- (iii) the responsibility to be laid on executives and departments and
- (iv) corrective actions which should be taken to obviate or reduce the variances.

Mere calculation and analysis of variances is of no use. The success of variance analysis depends upon how quickly and effectively the corrective actions can be taken on the analysed variances. In fact variance gives information. The manager needs to act on the information provided for taking corrective action. Information is the means and action taken on it is the end. In other words, the calculation of variances in standard costing is not an end in itself, but a means to an end.

Question-3

Describe the various steps involved in adopting standard costing system in an organization.

11.11 Cost Accounting

Solution:

The Steps of standard costing is as below:

- (i) **Setting of Standards:** The first step is to set standards which are to be achieved.
 - (ii) **Ascertainment of actual costs:** Actual cost for each component of cost is ascertained. Actual costs are ascertained from books of account, material invoices, wage sheet, charge slip etc.
 - (iii) **Comparison of actual cost and standard cost:** Actual costs are compared with the standards costs and variances are determined.
 - (iv) **Investigation of variances:** Variances arises are investigated for further action. Based on this performance is evaluated and appropriate actions are taken.
 - (v) **Disposition of variances:** Variances arise are disposed off by transferring it the relevant accounts (costing profit and loss account) as per the accounting method (plan) adopted.
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SECTION- B

Question 1

Calculate Efficiency and Capacity ratio from the following figures:

Budgeted production	80 units
Actual production	60 units
Standard time per unit	8 hours
Actual hours worked	500 hours.

Solution:

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

$$\text{Or, } \frac{60 \text{ units} \times 8 \text{ hours}}{500 \text{ hours}} \times 100 \quad \text{Or, } \frac{480 \text{ hours}}{500 \text{ hours}} \times 100 = 96\%$$

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

$$\text{Or, } \frac{500 \text{ hours}}{80 \text{ units} \times 8 \text{ hours}} \times 100 \quad \text{Or, } \frac{500 \text{ hours}}{640 \text{ hours}} \times 100 = 78.12\%$$

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:

Standard	Unit cost (`)
Direct material 5 kg. @ ` 4.20	21.00
Direct labour 3 hours @ ` 3.00	9.00
Factory overhead ` 1.20 per labour hour	3.60
Total manufacturing cost	33.60

The production schedule for the month of June, 2013 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, 2013, 2,25,000 kg. of material at the rate of ` 4.50 per kg. Production and Sales records for the month showed the following actual results.

Material used	2,05,600 kg.
Direct labour 1,21,200 hours; cost incurred	` 3,87,840
Total factory overhead cost incurred	` 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, 2013 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.*

Solution

(i) Material variances:

(a) Direct Material Cost Variance = Standard Cost – Actual Cost

$$= (40,960 \text{ units} \times 5 \text{ kg.} \times ` 4.20) - (2,05,600 \text{ kg.} \times ` 4.50)$$

$$= ` 8,60,160 - ` 9,25,200 = ` 65,040 (A)$$

(b) Material Price Variance = Actual Qty. (Std. Price – Actual Price)

$$= 2,05,600 * \text{kg.} (` 4.20 - ` 4.50) = ` 61,680 (A)$$

11.13 Cost Accounting

(*Material variances are calculated on the basis of consumption)

$$\begin{aligned} \text{(c) Material Usages Variance} &= \text{Std. Price (Std. Qty. - Actual Qty.)} \\ &= ₹ 4.20 (40,960 \text{ units} \times 5 \text{ kg.} - 2,05,600 \text{ kg.}) \\ &= ₹ 3,360 \text{ (A)} \end{aligned}$$

(ii) Labour Variances and Overhead Variances:

$$\begin{aligned} \text{(a) Labour Cost Variance} &= \text{Standard cost - Actual cost} \\ &= (40,960 \text{ units} \times 3 \text{ hours} \times ₹ 3) - ₹ 3,87,840 \\ &= ₹ 19,200 \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{(b) Labour Rate Variance} &= \text{Actual Hours (Std. Rate - Actual Rate)} \\ &= 1,21,200 \text{ hours} (₹ 3 - ₹ 3.20) \\ &= ₹ 24,240 \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{(c) Labour Efficiency Variance} &= \text{Std. Rate (Std. Hour - Actual Hour)} \\ &= ₹ 3 (40,960 \text{ units} \times 3 \text{ hour} - 1,21,200 \text{ hour}) \\ &= ₹ 5,040 \text{ (F)} \end{aligned}$$

$$\begin{aligned} \text{(d) Total Factory Overhead Variance} &= \text{Factory Overhead Absorbed - Actual Factory Overhead} \\ &= (\text{Actual Hours} \times \text{Std. Rate}) - \text{Actual Factory Overhead} \\ &= (40,960 \text{ units} \times 3 \text{ hours} \times ₹ 1.20) - ₹ 1,00,000 \\ &= ₹ 47,456 \text{ (F)} \end{aligned}$$

(iii) Preparation of Income Statement

Calculation of unit selling price	(₹)
Direct material	21.00
Direct labour	9.00
Factory overhead	3.60
Factory cost	33.60
Margin 25% on factory cost	8.40
Selling price	42.00

Income Statement

	(₹)	(₹)
Sales (40,000 units × ₹ 42)		16,80,000

Less: Standard cost of goods sold (40,000 units × ₹ 33.60)		13,44,000
		3,36,000
Less: Adverse Variances:		
Material Price variance	61,680	
Material Usage variance	3,360	
Labour Rate variance	24,240	89,280
		2,46,720
Add: Favourable variances:		
Labour efficiency variance	5,040	
Factory overhead	47,456	52,496
Actual gross margin		2,99,216

(iv)

Labour hour saved	(₹)
Standard labour hours (40,960 units × 3 hours)	1,22,880
Actual labour hour worked	1,21,200
Labour hour saved	1,680

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

Question 3

UV Ltd. presents the following information for November, 2013:

Budgeted production of product P = 200 units.

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

Standard price of material A = ₹ 6 per kg.

Actually, 250 units of P were produced and material A was purchased at ₹ 8 per kg and consumed at 1.8 kg per unit of P. Calculate the Material Cost Variances.

Solution:

Actual production of P = 250 units

Standard quantity of material A for actual production = 2 kg. × 250 units = 500 kg. (SQ)

Actual quantity of material A for actual production = 1.8 kg. × 250 units = 450 kg. (AQ)

Standard price per kg. of material A = ₹ 6 (SP)

Actual price per kg. of material A = ₹ 8 (AP)

11.15 Cost Accounting

- (1) Total Material Cost Variance = (Standard Price × Standard Quantity)
– (Actual Price × Actual Quantity)
= (₹ 6 × 500 kg.) – (₹ 8 × 450 kg.)
= ₹ 3,000 – ₹ 3,600 = ₹ 600 (A)
- (2) Material Price Variance = (Standard Price – Actual Price) × Actual Quantity
= (₹ 6 – ₹ 8) × 450 kg. = 900 (A)
- (3) Material Usage Variance = (Standard Quantity – Actual Quantity) × Standard Price
= (500 kg. – 450 kg.) × ₹ 6 = 300 (F)
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Question 4

The following information is available from the cost records of Vatika & Co. For the month of August, 2013:

Material purchased 24,000 kg ₹ 1,05,600

Material consumed 22,800 kg

Actual wages paid for 5,940 hours ₹ 29,700

Unit produced 2,160 units.

Standard rates and prices are:

Direct material rate is ₹ 4.00 per unit

Direct labour rate is ₹ 4.00 per hour

Standard input is 10 kg. for one unit

Standard labour requirement is 2.5 hours per unit.

Calculate all material and labour variances for the month of August, 2013.

Solution:

Material Variances:

- (i) Material Cost Variance
= (Std. Qty. × Std. Price) – (Actual Qty. × Actual Price)
= (2,160 units × 10 kg. × ₹ 4) – (22,800 kg. × ₹ 4.40)
= ₹ 86,400 – ₹ 1,00,320 = ₹ 13,920 (A)
- (ii) Material Price Variance
= Actual Q (SP – AP)
= 24,000 kg. (₹ 4 – ₹ 4.40) = ₹ 9,600 (A)

(Here AQ means actual quantity of material purchased)

- (iii) **Material Usage Variance**
 = SP (SQ – AQ)
 = ₹ 4 (21,600 kg. – 22,800 kg.) = ₹ 4,800 (A)

Labour Variances:

- (i) **Labour Cost Variance**
 = (SH × SR) – (AH × AR)
 = (2,160 units × 2.50 hours × ₹ 4) – ₹ 29,700
 = ₹ 21,600 – ₹ 29,700 = ₹ 8,100 (A)
- (ii) **Labour Rate Variance**
 = AH (SR – AR) = 5,940 hours (₹ 4 – ₹ 5) = ₹ 5,940 (A)
- (iii) **Labour Efficiency Variance**
 = SR (SH – AH)
 = ₹ 4 (5,400 hours – 5,940 hours) = ₹ 2,160 (A)

Question 5

SB Constructions Limited has entered into a big contract at an agreed price of ₹ 1,50,00,000 subject to an escalation clause for material and labour as spent out on the contract and corresponding details are as follows:

Material:	Standard		Actual	
	Quantity	Rate per Ton	Quantity	Rate per Ton
	(Tons)	(₹)	(Tons)	(₹)
A	3,000	1,000	3,400	1,100
B	2,400	800	2,300	700
C	500	4,000	600	3,900
D	100	30,000	90	31,500
Labour:	Hours	Hourly Rate	Hours	Hourly Rate
		(₹)		(₹)
L ₁	60,000	15	56,000	18
L ₂	40,000	30	38,000	35

You are required to:

Calculate the following variances and verify them :

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- (a) Material Cost Variance
- (b) Material Price Variance
- (c) Material Usage Variance
- (d) Labour Cost Variance
- (e) Labour Rate Variance
- (f) Labour Efficiency Variance.

Solution:

Material Variances

(SQ × SP)	(`)	(AQ × AP)	(`)	(AQ × SP)	(`)
A-3,000 × 1,000	= 30,00,000	3,400 × 1,100	= 37,40,000	3,400 × 1,000	= 34,00,000
B-2,400 × 800	= 19,20,000	2,300 × 700	= 16,10,000	2,300 × 800	= 18,40,000
C- 500 × 4,000	= 20,00,000	600 × 3,900	= 23,40,000	600 × 4,000	= 24,00,000
D-100×30,000	= 30,00,000	90 × 31,500	= 28,35,000	90 × 30,000	= 27,00,000
Total	99,20,000		1,05,25,000		1,03,40,000

- (a) Material Cost Variance (MCV) = (SQ × SP) – (AQ × AP)
 = ` 99, 20,000 – ` 1, 05, 25,000 = ` 6, 05,000 (A)
- (b) Material Price Variance (MPV) = AQ (SP – AP) or (AQ × SP) – (AQ × AP)
 = ` 1, 03, 40,000 – ` 1, 05, 25,000 = ` 1, 85,000 (A)
- (c) Material Usage Variance (MUV) = (SQ × SP) – (AQ × SP)
 = ` 99, 20,000 – ` 1, 03, 40,000 = ` 4, 20,000(A)
- Verification, MCV = MPV + MUV
 Or, ` 6, 05,000 (A) = ` 1, 85,000 (A) + ` 4, 20,000 (A)
 Or, ` 6, 05,000 (A) = ` 6, 05,000 (A)

Labour Variances

(SH × SR)	(`)	(AH× AR)	(`)	(AH× SR)	(`)
L ₁ –60,000 × 15	= 9,00,000	56,000 × 18	= 10,08,000	56,000 × 15	= 8,40,000
L ₂ – 40,000 × 30	= 12,00,000	38,000 × 35	= 13,30,000	38,000 × 30	= 11,40,000
Total	21,00,000		23,38,000		19,80,000

- (a) Labour Cost Variance (LCV) = (SH × SR) – (AH × AR)
 = ` 21,00,000 – ` 23,38,000 = ` 2,38,000 (A)

(b) Labour Rate Variance (LRV) = (AH × SR) – (AH × AR)
 = ` 19,80,000 – ` 23,38,000 = ` 3,58,000 (A)

(c) Labour Efficiency Variance (LEV) = (SH × SR) – (AH × SR)
 = ` 21,00,000 – ` 19,80,000 = ` 1,20,000 (F)

Verification, LCV = LRV + LEV
 Or, ` 2,38,000 (A) = ` 3,58,000 (A) + ` 1,20,000 (F)
 Or, ` 2,38,000 (A) = ` 2,38,000 (A)

Question 6

Compute the sales variances (total, price and volume) from the following figures:

Product	Budgeted quantity	Budgeted Price per Unit (`)	Actual quantity	Actual Price per unit (`)
P	4000	25	4800	30
Q	3000	50	2800	45
R	2000	75	2400	70
S	1000	100	800	105

Solution:

Working:

Product	Budgeted Price (`)	Actual Price (`)	Budgeted Qty.	Actual Qty.	Budgeted Sales (`)	Standard Sales (Actual Sales at Budgeted price) (`)	Actual sales (`)
	(a)	(b)	(c)	(d)	(e) = (a × c)	(f) = (a × d)	(g) = (b × d)
P	25	30	4,000	4,800	1,00,000	1,20,000	1,44,000
Q	50	45	3,000	2,800	1,50,000	1,40,000	1,26,000
R	75	70	2,000	2,400	1,50,000	1,80,000	1,68,000
S	100	105	1,000	800	1,00,000	80,000	84,000
					5,00,000	5,20,000	5,22,000

Calculation of Variances:

Sale Price Variance = Actual Quantity (Actual Price – Budgeted Price)
 = Actual Sales – Standard. Sales
 = ` 5,22,000 – ` 5,20,000 = ` 2,000 (F)

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Sales Volume Variance = Budgeted Price (Actual Quantity – Budgeted Quantity)
= Standard Sales – Budgeted Sales
= ₹ 5,20,000 – ₹ 5,00,000 = ₹ 20,000 (F)

Total Sales Variance = Actual Sales – Budgeted Sales
= ₹ 5,22,000 – ₹ 5,00,000 = ₹ 22,000 (F)

Verification, Total Sales Variance = Sales Price Variance + Sales Volume Variance
₹ 22,000 (F) = ₹ 2,000 (F) + ₹ 20,000 (F)

Question 7

Gama Ltd. has furnished the following standard cost data per unit of production:

Material 10 kg @ ₹ 10 per kg.

Labour 6 hours @ ₹ 5.50 per hour

Variable overhead 6 hours @ ₹ 10 per hour.

Fixed overhead ₹ 4,50,000 per month (Based on a normal volume of 30,000 labour hours.)

The actual cost data for the month of August 2013 are as follows:

Material used 50,000 kg at a cost of ₹ 5,25,000.

Labour paid ₹ 1,55,000 for 31,000 hours worked

Variable overheads ₹ 2,93,000

Fixed overheads ₹ 4,70,000

Actual production 4,800 units.

Calculate:

- (i) Material Cost Variance.*
- (ii) Labour Cost Variance.*
- (iii) Fixed Overhead Cost Variance.*
- (iv) Variable Overhead Cost Variance.*

Solution:

Budgeted Production 30,000 hours ÷ 6 hours per unit = 5,000 units

Budgeted Fixed Overhead Rate = ₹ 4,50,000 ÷ 5,000 units = ₹ 90 per unit Or

= ₹ 4,50,000 ÷ 30,000 hours = ₹ 15 per hour.

- (i) Material Cost Variance = (Std. Qty. × Std. Price) – (Actual Qty. × Actual Price)
= (4,800 units × 10 kg. × ₹ 10) - ₹ 5,25,000

$$\begin{aligned}
 &= \text{₹ } 4,80,000 - \text{₹ } 5,25,000 \\
 &= \text{₹ } 45,000 \text{ (A)} \\
 \text{(ii) Labour Cost Variance} &= (\text{Std. Hours} \times \text{Std. Rate}) - (\text{Actual Hours} \times \text{Actual rate}) \\
 &= (4,800 \text{ units} \times 6 \text{ hours} \times \text{₹ } 5.50) - \text{₹ } 1,55,000 \\
 &= \text{₹ } 1,58,400 - \text{₹ } 1,55,000 \\
 &= \text{₹ } 3,400 \text{ (F)} \\
 \text{(iii) Fixed Overhead Cost Variance} &= (\text{Budgeted Rate} \times \text{Actual Qty}) - \text{Actual Overhead} \\
 &= (\text{₹ } 90 \times 4,800 \text{ units}) - \text{₹ } 4,70,000 \\
 &= \text{₹ } 38,000 \text{ (A)} \\
 \text{OR} &= (\text{Budgeted Rate} \times \text{Std. Hours}) - \text{Actual Overhead} \\
 &= (\text{₹ } 15 \times 4,800 \text{ units} \times 6 \text{ hours}) - \text{₹ } 4,70,000 \\
 &= \text{₹ } 38,000 \text{ (A)} \\
 \text{(iv) Variable Overhead Cost Variance} &= (\text{Std. Rate} \times \text{Std. Hours}) - \text{Actual Overhead} \\
 &= (4,800 \text{ units} \times 6 \text{ hours} \times \text{₹ } 10) - \text{₹ } 2,93,000 \\
 &= \text{₹ } 2,88,000 - \text{₹ } 2,93,000 \\
 &= \text{₹ } 5,000 \text{ (A)}
 \end{aligned}$$

Question 8

SJ Ltd. has furnished the following information:

<i>Standard overhead absorption rate per unit</i>	<i>₹ 20</i>
<i>Standard rate per hour</i>	<i>₹ 4</i>
<i>Budgeted production</i>	<i>12,000 units</i>
<i>Actual production</i>	<i>15,560 units</i>

Actual overheads were ₹ 2,95,000 out of which ₹ 62,500 fixed .

Actual hours *74,000*

Overheads are based on the following flexible budget

<i>Production (units)</i>	<i>8,000</i>	<i>10,000</i>	<i>14,000</i>
<i>Total Overheads (₹)</i>	<i>1,80,000</i>	<i>2,10,000</i>	<i>2,70,000</i>

You are required to calculate the following overhead variances (on hour's basis) with appropriate workings:

- (i) *Variable overhead efficiency and expenditure variance*

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(ii) Fixed overhead efficiency and capacity variance.

Solution:

Workings:

(a) Variable Overhead rate per unit

$$\begin{aligned} &= \frac{\text{Difference of Overhead at two level}}{\text{Difference in Production units}} \\ &= \frac{\text{`2,10,000} - \text{`1,80,000}}{10,000 \text{ units} - 8,000 \text{ units}} = \text{`15} \end{aligned}$$

(b) Fixed Overhead = `1,80,000 – (8,000 units × `15) = `60,000

(c) Standard hours per unit of production = $\frac{\text{Std. Overhead Absorption Rate}}{\text{Std. Rate per hour}}$

$$= \frac{\text{`20}}{\text{`4}} = 5 \text{ hours}$$

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

$$= \frac{\text{`15}}{5 \text{ hours}} = \text{`3}$$

(e) Standard Fixed Overhead Rate per hour = `4 - `3 = `1

(f) Actual Variable Overhead = `2,95,000 – `62,500 = `2,32,500

(g) Actual Variable Overhead Rate per Hour = $\frac{\text{`2,32,500}}{74,000 \text{ hours}} = \text{`3.1419}$

(h) Budgeted hours = 12,000 units × 5 hours = 60,000 hours

(i) Standard Hours for Actual Production = 15,560 units × 5 hours = 77,800 hours

(i) Variable Overhead Efficiency and Expenditure Variance:

$$\begin{aligned} \text{Variable Overhead Efficiency Variance} &= \text{Std. Rate per hour (Std. Hours – Actual Hours)} \\ &= \text{`3 (77,800 hours – 74,000 hours)} \\ &= \text{`11,400 (F)} \end{aligned}$$

$$\begin{aligned} \text{Variable Overhead Expenditure Variance} &= \text{Actual Hours (Std. Rate - Actual Rate)} \\ &= 74,000 \text{ hours (`3 - `3.1419)} \\ &= \text{`10,500 (A)} \end{aligned}$$

(ii) Fixed Overhead Efficiency and Capacity Variance:

Fixed Overhead Efficiency Variance = Std. Rate per Hour (Std. Hours-Actual Hours)
 = ` 1(77,800 hours -74,000 hours) = ` 3,800 (F)

Fixed Overheads Capacity Variance = Std. Rate per Hour (Actual Hours -Budgeted Hours)
 = ` 1(74,000 hours – 60,000 hours)
 = ` 74,000 – ` 60,000= ` 14,000 (F)

Question 9

The standard labour employment and the actual labour engaged in a 40 hours week for a job are as under:

Category of Workers	Standard		Actual	
	No. of workers	Wage Rate per hour (`)	No. of workers	Wage Rate per hour (`)
Skilled	65	45	50	50
Semi-skilled	20	30	30	35
Unskilled	15	15	20	10

Standard output: 2,000 units; Actual output: 1,800 units

Abnormal Idle time 2 hours in the week

Calculate:

- (i) Labour Cost Variance
- (ii) Labour Efficiency Variance
- (iii) Labour Idle Time Variance.

Solution:

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] x 1,800 units	` 45	` 1,05,300	2,000 hrs. (50 Workers x 40 hrs.)	` 50	` 1,00,000	100 hrs. (50 Workers x 2 hrs.)	1,900 hrs. (2,000 hrs.-100 hrs.)
Semi-skilled	720 hrs. [(20 Workers x	` 30	` 21,600	1,200 hrs. (30 Workers	` 35	` 42,000	60 hrs. (30	1,140 hrs. (1,200 hrs.-60

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	40 hrs./ 2,000 units] x1,800 units			x 40 hrs.)			Workers x 2 hrs.)	hrs.)
Unskilled	540 hrs. [(15 Workers x 40 hrs.) / 2,000 units] x1,800 units	₹ 15	₹ 8,100	800 hrs. (20 Workers x 40 hrs.)	₹ 10	₹ 8,000	40 hrs. (20 Workers x 2 hrs.)	760 hrs. (800 hrs.-40 hrs.)
Total	3,600 hrs.		₹ 1,35,000	4,000 hrs.		₹ 1,50,000	200 hrs.	3,800 hrs.

Calculation of Variances

- (i) Labour Cost Variance = Standard Cost for actual output – Actual cost
- Skilled worker = ₹ 1,05,300 - ₹ 1,00,000
= ₹ 5,300 (F)
- Semi-skilled worker = ₹ 21,600 - ₹ 42,000
= ₹ 20,400 (A)
- Unskilled Worker = ₹ 8,100 - ₹ 8,000
= ₹ 100 (F)
- Total = ₹ 5,300 (F) + ₹ 20,400 (A) + ₹ 100 (F)
= ₹ 15,000 (A)
- (ii) Labour Efficiency Variance = Std. Rate x (Standard hours – Actual hours worked)
- Skilled worker = ₹ 45 x (2,340 hrs. - 1,900 hrs.)
= ₹ 19,800 (F)
- Semi-skilled worker = ₹ 30 x (720 hrs. - 1,140 hrs.)
= ₹ 12,600 (A)
- Unskilled Worker = ₹ 15 x (540 hrs. - 760 hrs.)
= ₹ 3,300 (A)
- Total = ₹ 19,800 (F) + ₹ 12,600 (A) + ₹ 3,300 (A)
= ₹ 3,900 (F)
- (iii) Labour Idle Time Variance = Std. Rate x Idle Time (Hrs.)
- Skilled worker = ₹ 45 x 100 hrs.
= ₹ 4,500 (A)
- Semi-skilled worker = ₹ 30 x 60 hrs.
= ₹ 1,800 (A)

Unskilled worker	= ` 15 x 40 hrs. = ` 600 (A)
Total	= ` 4,500 (A) + ` 1,800 (A) + ` 600 (A)
	= ` 6,900 (A)

Question 10

Following are the details of the product Phomex for the month of April 2013:

Standard quantity of material required per unit	5 kg
Actual output	1000 units
Actual cost of materials used	` 7,14,000
Material price variance	` 51,000 (Fav)

Actual price per kg of material is found to be less than standard price per kg of material by ` 10.

You are required to calculate:

- (i) Actual quantity and Actual price of materials used.
- (ii) Material Usage Variance
- (iii) Material Cost Variance.

Solution:

(i) Actual Quantity and Actual Price of material used

Material Price Variance = Actual Quantity (Std. Price – Actual Price) = ` 51,000

Or, AQ (SP – AP) = ` 51,000

Or, 10 AQ = ` 51,000

Or, AQ = 5,100 kgs

Actual cost of material used is given i.e.

AQ x AP = ` 7,14,000

Or, 5,100 AP = ` 7,14,000

AP = ` 140

∴ Actual price is less by ` 10

So, Standard Price = ` 140 + ` 10 = ` 150 per kg

Actual Quantity = 5,100 kgs

Actual Price = ` 140/kg

(ii) Material Usage Variance

Std. Price (Std. Quantity – Actual Quantity)

Or, SP (SQ – AQ) = ` 150 (1,000 units x 5 kg – 5,100 kg)

= ` 15,000 (A)

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(iii) **Material Cost Variance** = Std. Cost – Actual Cost
= (SP x SQ) – (AP x AQ)
= ` 150 x 5,000 – ` 140 x 5,100
= ` 7,50,000 – ` 7,14,000
= ` 36,000 (F)

OR

Material Price Variance + Material Usage Variance

` 51,000 (F) + ` 15,000 (A) = ` 36,000 (F)

Question 11

SP Limited produces a product 'Tempex' which is sold in a 10 Kg. packet. The standard cost card per packet of 'Tempex' are as follows:

	(`)
Direct materials 10 kg @ ` 45 per kg	450
Direct labour 8 hours @ ` 50 per hour	400
Variable Overhead 8 hours @ ` 10 per hour	80
Fixed Overhead	<u>200</u>
	<u>1,130</u>

Budgeted output for the third quarter of a year was 10,000 Kg. Actual output is 9,000 Kg.

Actual cost for this quarter are as follows :

	(`)
Direct Materials 8,900 Kg @ ` 46 per Kg.	4,09,400
Direct Labour 7,000 hours @ ` 52 per hour	3,64,000
Variable Overhead incurred	72,500
Fixed Overhead incurred	1,92,000

You are required to calculate :

- (i) Material Usage Variance
- (ii) Material Price Variance
- (iii) Material Cost Variance
- (iv) Labour Efficiency Variance
- (v) Labour Rate Variance
- (vi) Labour Cost Variance
- (vii) Variable Overhead Cost Variance
- (viii) Fixed Overhead Cost Variance.

Solution:

- (i) Material Usage Variance = Std. Price (Std. Quantity – Actual Quantity)
 = ` 45 (9,000 kg. – 8,900 kg.)
 = ` 4,500 (Favourable)
- (ii) Material Price Variance = Actual Quantity (Std. Price – Actual Price)
 = 8,900 kg. (` 45 – ` 46) = ` 8,900 (Adverse)
- (iii) Material Cost Variance = Std. Material Cost – Actual Material Cost
 = (SQ × SP) – (AQ × AP)
 = (9,000 kg. × ` 45) – (8,900 kg. × ` 46)
 = ` 4,05,000 – ` 4,09,400
 = ` 4,400 (Adverse)
- (iv) Labour Efficiency Variance = Std. Rate (Std. Hours – Actual Hours)
 = ` 50 ($\frac{9,000}{10} \times 8 \text{ hours} - 7,000 \text{ hrs.}$)
 = ` 50 (7,200 hrs. – 7,000 hrs.)
 = ` 10,000 (Favourable)
- (v) Labour Rate Variance = Actual Hours (Std. Rate – Actual Rate)
 = 7,000 hrs. (` 50 – ` 52)
 = ` 14,000 (Adverse)
- (vi) Labour Cost Variance = Std. Labour Cost – Actual Labour Cost
 = (SH × SR) – (AH × AR)
 = (7,200 hrs. × ` 50) – (7,000 hrs. × ` 52)
 = ` 3,60,000 – ` 3,64,000
 = ` 4,000 (Adverse)
- (vii) Variable Cost Variance = Std. Variable Cost – Actual Variable Cost
 = (7,200 hrs. × ` 10) – ` 72,500
 = ` 500 (Adverse)
- (viii) Fixed Overhead Cost Variance = Absorbed Fixed Overhead – Actual Fixed Overhead
 = $\frac{` 200}{10 \text{ kgs.}} \times 9,000 \text{ kgs.} - ` 1,92,000$
 = ` 1,80,000 – ` 1,92,000 = ` 12,000 (Adverse)
-

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Question 12

XYZ Co. Ltd. provides the following information:

	Standard	Actual
Production	4,000 Units	3,800 Units
Working Days	20	21
Fixed Overhead	₹ 40,000	₹ 39,000
Variable Overhead	₹ 12,000	₹ 12,000

You are required to calculate following overhead variances:

- (a) Variable Overhead Variance
- (b) Fixed Overhead Variances
 - (i) Expenditure Variance
 - (ii) Volume Variance

Solution:

Workings:

$$\text{Standard Variable Overhead rate per unit} = \frac{\text{₹ } 12,000}{4,000 \text{ units}} = \text{₹ } 3$$

$$\text{Standard Fixed Overhead rate per unit} = \frac{\text{₹ } 40,000}{4,000 \text{ units}} = \text{₹ } 10$$

- (a) Variable Overhead Variance = Recovered Variable Overhead - Actual Variable overhead
= 3,800 units × ₹ 3 – ₹ 12,000
= ₹ 11,400 – ₹ 12,000 = ₹ 600 (Adverse)
 - (b) (i) Fixed Overhead Expenditure Variance = Budgeted Overhead – Actual Overhead
= ₹ 40,000 – ₹ 39,000
= ₹ 1,000 (Favourable)
 - (ii) Fixed Overhead Volume Variance = Recovered Overhead – Budgeted Overhead
= 3,800 units × ₹ 10 – ₹ 40,000
= ₹ 38,000 – ₹ 40,000
= ₹ 2,000 (Adverse)
-

Question 13

Jigyasa Pharmaceuticals Ltd. is engaged in producing dietary supplement 'Funkids' for growing children. It produces 'Funkids' in a batch of 10 kgs. Standard material inputs required for 10 kgs. of 'Funkids' are as below:

Material	Quantity (in kgs.)	Rate per kg. (in `)
Vita-X	5	110
Proto-D	3	320
Mine-L	3	460

During the month of March, 2014, actual production was 5,000 kgs. of 'Funkids' for which the actual quantities of material used for a batch and the prices paid thereof are as under:

Material	Quantity (in kgs.)	Rate per kg. (in `)
Vita-X	6	115
Proto-D	2.5	330
Mine-L	2	405

You are required to calculate the following variances based on the above given information for the month of March, 2014 for Jigyasa Pharmaceuticals Ltd.:

- (i) *Material Cost Variance;*
- (ii) *Material Price Variance;*
- (iii) *Material Usage Variance;*
- (iv) *Material Mix Variance;*
- (v) *Material Yield Variance.*

Solution:

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

* Standard Quantity of materials for actual output :

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Vita-X	$= \frac{5\text{kgs.}}{10\text{kgs}} \times 5,000\text{kgs.} = 2,500\text{kgs.}$
Proto-D	$= \frac{3\text{kgs.}}{10\text{kgs}} \times 5,000\text{kgs.} = 1,500\text{kgs.}$
Mine-L	$= \frac{3\text{kgs.}}{10\text{kgs}} \times 5,000\text{kgs.} = 1,500\text{kgs.}$

** 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)

Or = (SQ × SP) – (AQ × AP)

Vita-X	= ` 2,75,000 - ` 3,45,000	= ` 70,000 (A)
Proto-D	= ` 4,80,000 - ` 4,12,500	= ` 67,500 (F)
Mine-L	= ` 6,90,000 - ` 4,05,000	= ` 2,85,000 (F)
		` 2,82,500 (F)

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

= (AQ × SP) – (AQ × AP)

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

Proto-D	= ` 4,00,000 - ` 4,12,500	= ` 12,500 (A)	
Mine-L	= ` 4,60,000 - ` 4,05,000	= ` 55,000 (F)	
		` 27,500 (F)	
(iii) Material Usage Variance	= Std. Price (Std. Qty. – Actual Qty.)		
Or	= (SQ × SP) – (AQ × SP)		
Vita-X	= ` 2,75,000 - ` 3,30,000	= ` 55,000 (A)	
Proto-D	= ` 4,80,000 - ` 4,00,000	= ` 80,000 (F)	
Mine-L	= ` 6,90,000 - ` 4,60,000	= ` 2,30,000 (F)	
		` 2,55,000 (F)	
(iv) Material Mix Variance	= Std. Price (Revised Std. Qty. – Actual Qty.)		
Or	= (RSQ × SP) – (AQ × SP)		
Vita-X	= ` 2,62,460 - ` 3,30,000	= ` 67,540 (A)	
Proto-D	= ` 4,58,240 - ` 4,00,000	= ` 58,240 (F)	
Mine-L	= ` 6,58,720 - ` 4,60,000	= ` 1,98,720 (F)	
		= ` 1,89,420 (F)	
(v) Material Yield Variance	= Std. Price (Std. Qty. – Revised Std. Qty.)		
Or	= (SQ × SP) – (RSQ × SP)		
Vita-X	= ` 2,75,000 - ` 2,62,460	= ` 12,540 (F)	
Proto-D	= ` 4,80,000 - ` 4,58,240	= ` 21,760 (F)	
Mine-L	= ` 6,90,000 - ` 6,58,720	= ` 31,280 (F)	
		= ` 65,580 (F)	

Question 14

ABC Ltd. had prepared the following estimation for the month of April:

	Quantity	Rate (`)	Amount (`)
Material-A	800 kg.	45.00	36,000
Material-B	600 kg.	30.00	18,000
Skilled labour	1,000 hours	37.50	37,500
Unskilled labour	800 hours	22.00	17,600

Normal loss was expected to be 10% of total input materials and an idle labour time of 5% of expected labour hours was also estimated.

11.31 Cost Accounting

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 1,480 kg. finished product by using the followings:

	Quantity	Rate (₹)	Amount (₹)
Material-A	900 kg.	43.00	38,700
Material-B	650 kg.	32.50	21,125
Skilled labour	1,200 hours	35.50	42,600
Unskilled labour	860 hours	23.00	19,780

You are required to calculate:

- Material Cost Variance;
- Material Price Variance;
- Material Mix Variance;
- Material Yield Variance;
- Labour Cost Variance;
- Labour Efficiency Variance and
- Labour Yield Variance.

Solution:

Material Variances:

Material	SQ (WN-1)	SP (₹)	SQ × SP (₹)	RSQ (WN-2)	RSQ × SP (₹)	AQ	AQ × SP (₹)	AP (₹)	AQ × AP (₹)
A	940 kg.	45.00	42,300	886 kg.	39,870	900 kg.	40,500	43.00	38,700
B	705 kg.	30.00	21,150	664 kg.	19,920	650 kg.	19,500	32.50	21,125
	1645 kg		63,450	1550 kg	59,790	1550 kg	60,000		59,825

WN-1: Standard Quantity (SQ):

$$\text{Material A- } \left(\frac{800\text{kg.}}{0.9 \times 1,400\text{kg.}} \times 1,480\text{kg.} \right) = 939.68 \text{ or } 940 \text{ kg.}$$

$$\text{Material B- } \left(\frac{600\text{kg.}}{0.9 \times 1,400\text{kg.}} \times 1,480\text{kg.} \right) = 704.76 \text{ or } 705 \text{ kg.}$$

WN- 2: Revised Standard Quantity (RSQ):

$$\text{Material A- } \left(\frac{800\text{kg.} \times 1,550\text{kg.}}{1,400\text{kg.}} \right) = 885.71 \text{ or } 886 \text{ kg.}$$

$$\text{Material B- } \left(\frac{600\text{kg.} \times 1,550\text{kg.}}{1,400\text{kg.}} \right) = 664.28 \text{ or } 664 \text{ kg.}$$

- (a) Material Cost Variance (A + B) = {(SQ × SP) – (AQ × AP)}
 = {63,450 – 59,825} = 3,625 (F)
- (b) Material Price Variance (A + B) = {(AQ × SP) – (AQ × AP)}
 = {60,000 – 59,825} = 175 (F)
- (c) Material Mix Variance (A + B) = {(RSQ × SP) – (AQ × SP)}
 = {59,790 – 60,000} = 210 (A)
- (d) Material Yield Variance (A + B) = {(SQ × SP) – (RSQ × SP)}
 = {63,450 – 59,790} = 3,660 (F)

Labour Variances:

Labour	SH (WN-3)	SR (`)	SH × SR (`)	RSH (WN-4)	RSH × SR (`)	AH	AH × SR (`)	AR (`)	AH × AR (`)
Skilled	1,116 hrs	37.50	41,850	1144	42,900	1,200	45,000	35.50	42,600
Unskilled	893 hrs	22.00	19,646	916	20,152	860	18,920	23.00	19,780
	2,009 hrs		61,496	2,060	63,052	2,060	63,920		62,380

WN- 3: Standard Hours (SH):

$$\text{Skilled labour- } \left(\frac{0.95 \times 1,000\text{hr.} \times 1,480\text{kg.}}{0.90 \times 1,400\text{kg.}} \right) = 1,115.87 \text{ or } 1,116 \text{ hrs.}$$

$$\text{Unskilled labour- } \left(\frac{0.95 \times 800\text{hr.} \times 1,480\text{kg.}}{0.90 \times 1,400\text{kg.}} \right) = 892.69 \text{ or } 893 \text{ hrs.}$$

WN- 4: Revised Standard Hours (RSH):

$$\text{Skilled labour- } \left(\frac{1,000\text{hr.} \times 2,060\text{hr.}}{1,800\text{hr.}} \right) = 1,144.44 \text{ or } 1,144 \text{ hrs.}$$

11.33 Cost Accounting

$$\text{Unskilled labour-} \left(\frac{800\text{hr.} \times 2,060\text{hr.}}{1,800\text{hr.}} \right) = 915.56 \text{ or } 916 \text{ hrs.}$$

(e) Labour Cost Variance (Skilled + Unskilled) = $\{(SH \times SR) - (AH \times AR)\}$
= $\{61,496 - 62,380\} = 884 \text{ (A)}$

(f) Labour Efficiency Variance (Skilled + Unskilled) = $\{(SH \times SR) - (AH \times SR)\}$
= $\{61,496 - 63,920\} = 2,424 \text{ (A)}$

(g) Labour Yield Variance (Skilled + Unskilled) = $\{(SH \times SR) - (RSH \times SR)\}$
= $\{61,496 - 63,052\} = 1,556 \text{ (A)}$

Question 15

The following information has been provided by a company:

Number of units produced and sold	6,000
Standard labour rate per hour	8
Standard hours required for 6,000 units	-
Actual hours required	17,094 hours
Labour efficiency	105.3%
Labour rate variance	68,376 (A)

You are required to calculate:

- Actual labour rate per hour
- Standard hours required for 6,000 units
- Labour Efficiency variance
- Standard labour cost per unit
- Actual labour cost per unit.

Solution:

SR – Standard labour Rate per Hour

AR – Actual labour rate per hour

SH – Standard Hours

AH – Actual hours

(i) Labour rate Variance = $AH(SR - AR)$
= $17,094 (8 - AR) = 68,376 \text{ (A)} = - 68,476$
= $8 - AR = -4$

$$\begin{aligned}
 &= AR = \text{` } 12 \\
 \text{(ii) Labour Efficiency} &= \frac{SH}{AH} \times 100 = 105.3 \\
 &= SH = \frac{AH \times 105.3}{100} = \frac{17,094 \times 105.3}{100} \\
 &= 17,999.982 \\
 &= SH = 18,000 \text{ hours} \\
 \text{(iii) Labour Efficiency Variance} &= SR (SH - AH) \\
 &= 8(18,000 - 17,094) \\
 &= 8 \times 906 \\
 &= \text{` } 7,248 \text{ (F)} \\
 \text{(iv) Standard Labour Cost per Unit} &= \frac{18,000 \times 8}{6,000} = \text{` } 24 \\
 \text{(v) Actual Labour Cost Per Unit} &= \frac{17,094 \times 12}{6,000} = \text{` } 34.19
 \end{aligned}$$