UNIT - VI

MODULE - X

Standard Costing
Topics to be enlightened

- Introduction and Meaning
- Concept
- Advantages & Limitations
- Objectives of Standard Costing
- Preliminary Establishment
- Types of Standard
- Differences
- Standard Cost Card/Sheet
- Meaning of Analysis of Variance
- Importance, Features & Types of Variance
- Reporting of Variance
- Essentials of Effective Variance Report
- General Terms
  - Presentation of Variance
  - Control Ratio
  - Disposition/Disposal of Variance
- Practical Problems

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Introduction and Meaning

- The word standard simply means some norm, specification or target.
- It gives a reference point, benchmark, model or yardstick for comparison.
- Standard costs are part of cost accounting system whereby standard costs are incorporated directly and formally into the manufacturing accounts.
- Standard costing is a technique which uses standards for costs and revenues for the purpose of control through variance analysis.
- Standard costing aims at eliminating waste and increasing efficiency in operation through setting up standards for production costs and production performance.
- Precisely, standard costing is a control device and not a separate method of product costing.

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A standard costing system is a method of cost accounting in which standard costs are used in recording certain transaction and the actual costs are compared with the standard costs to learn the amount and reason for variations from the standard.

- W.B. Lawrence

Standard costing involves the preparation of cost based on pre-determined standards and continuous comparison of actual with them for purpose of guidance and control.

- D. Joseph
Concept of Standard Costing

Standard Cost

• Standard cost is a figure which represents an amount that can be taken as a typical of the post of an article or other cost factor.

Standard Costing

• Standard costing involves the preparation of cost based on pre-determined standards and continuous comparison of actual with them for the purpose of guidance and control.

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Advantages

- Proper Planning
- Efficient Cost Control
- Motivational Factor
- Comparison of Forecasting and Outcome
- Inventory Control
- Economical System
- Helpful in Budgeting
- Helps Formulate Policies
- Helps Distinguish Activities
- Eliminates Wastages

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Limitations

- Costly System
- Difficulties in Fixation of Standards
- Constraint for Service Industry
- Consistency of Standard
- Unsuitable for Non Standardized Products
- Difficulties for Small Industries
- Discouragement for Workers
- Inaccurate Diverse Results

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Objectives (as per e-text)

- To institute a control mechanism on all the elements of costs that affect production and sales
- To measure different operational efficiencies and check the wastages
- To improve the delegation of authority and generate a sense of responsibility among the employees
- To develop a cost consciousness in the employees
- To presume the production costs, sales and profit
- To avail the benefits of 'Management by exception.'
- To bring about a vivid progressive vision and sagacious decision making at each managerial level.

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Preliminary Establishment

- Setting up Cost Centre
- Classification of Accounts
- Determining the Type of Standards
- Setting the Standards

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Types of Standard

- Basic Standards
- Current Standards
  - Ideal Standards
  - Expected or Practical Standards
  - Normal Standards
Differences

- Standard and Historical Cost
- Standard and Estimated Cost
- Standard and Budgeted Cost
- Cost Centre and Profit Centre

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## Standard & Historical Cost

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Historical Cost</th>
<th>Standard Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Historical costs are the actual cost</td>
<td>Standard costs are the pre-determined cost</td>
</tr>
<tr>
<td>2</td>
<td>It only informs the total cost of a Product or service</td>
<td>Its function is to evaluate managerial performance and deficiency</td>
</tr>
<tr>
<td>3</td>
<td>Historical costs are ascertained after they have been incurred, and therefore are experienced costs of decisions previously made</td>
<td>Standard costs are anticipated costs which tend to state what the cost of production should be</td>
</tr>
<tr>
<td>4</td>
<td>It is related to past</td>
<td>It is related to future</td>
</tr>
<tr>
<td>5</td>
<td>It cannot do the role of Planning and Budgeting</td>
<td>Budgets are prepared on the basis of Standard costs</td>
</tr>
</tbody>
</table>

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# Standard Cost and Estimated Cost

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Standard Cost</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Standard cost aims at what the cost should be</td>
<td>Estimated cost is an assessment of what the cost will be</td>
</tr>
<tr>
<td>2</td>
<td>Standard cost are planned cost which are determined on a scientific basis after taking into account certain level efficiency</td>
<td>It is based on the average of past figures, taking into consideration anticipated charges in future</td>
</tr>
<tr>
<td>3</td>
<td>It lays emphasis on cost control, on setting the target against which actual performance is measured and if need be, corrective measures are sought</td>
<td>Estimated costs are used by the undertakings for fixing the selling price of the product</td>
</tr>
</tbody>
</table>

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## Standard Cost and Budgeted Cost

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Standard Cost</th>
<th>Budgetary Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Standard costing is intensive in application as it calls for detailed analysis of variance</td>
<td>Budgetary control is extensive in nature and the intensity of analysis tends to match less than that in standard costing</td>
</tr>
<tr>
<td>2</td>
<td>Standard cost represents realistic yardsticks and, therefore, more useful for controlling and reducing cost</td>
<td>Budgets usually represents an upper limit on spending without considering the effectiveness of the expenditure in terms of output</td>
</tr>
<tr>
<td>3</td>
<td>Standard cost is a projection of cost account</td>
<td>Budget is a projection of financial accounts</td>
</tr>
<tr>
<td>4</td>
<td>Standard cost are developed mainly for the manufacturing function and sometimes also for marketing and administration</td>
<td>Budgets are compiled for different functions of the business such as sales, purchase, cash, production, etc.</td>
</tr>
<tr>
<td>5</td>
<td>Standard costs are usually established after considering such vital matters as production capacity, methods employed and other factors which require attention when determining an acceptable level of efficiency</td>
<td>Budgets may be based on previous year’s costs without any attention being paid to efficiency</td>
</tr>
</tbody>
</table>

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# Cost Centre and Profit Centre

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Cost Centre</th>
<th>Profit Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A cost centre may be a location, person or item of equipment for which cost center may be ascertained and used for the purpose of cost control</td>
<td>Profit center is the cost center which shows profit</td>
</tr>
<tr>
<td>2</td>
<td>Cost center is necessary for fixing responsibilities for unfavorable variances</td>
<td>Profit center does not show for fixing responsibilities for unfavorable variance</td>
</tr>
</tbody>
</table>

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Variance means the deviation of the actual cost or actual sales from the standard cost or profit or sales.

When actual cost is less than standard cost or profit is better than the standard profit, it is known as ‘Favourable Variance’.

On the other hand, when actual cost is more than standard profit or sales, it is known as ‘Unfavourable Variance.’

The process of computing the amount of variance and isolates the causes of variances between actual and standard.

- C.I.M.A. London

The process of finding out the causes of the variances and evaluating their effect is regarded as ‘Analysis of Variance.’
Importance of Variance

- Check and control of wastage is possible.
- It improves the efficiency of the organization by the use of standard costing.
- It exercises control over all cost centers including departments, individuals and so on.
- Responsibility of a particular person or department can be fixed.
- In the prediction of production cost, sales and profit, variance analysis is very useful.
- On the basis of variance analysis, delegation of authority may be made effective.
- Variance analysis is easy to introduce, apply and orient result.
- Various operational efficiencies can be measured.

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In terms of money

- All the variances are calculated in terms of money

Standard items – the Minuend

- It should always be in standardized form with actual figure

Budgeted figure – the Minuend

- Budgeted figure is used in case of normal production

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Types of Variance

- On the basis of control
- On the basis of profitability
- On the basis of elements of cost

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### Material Variances

#### Material Cost Variances
- \[ MCV = (\text{Std. Quantity} \times \text{Std. Price}) - (\text{Actual Quantity} \times \text{Actual Price}) \]
- \[ (SQ \times SP) - (AQ \times AP) \]

#### Material Price Variances
- \[ MPV = \text{Actual Quantity} (\text{Std. Price} - \text{Actual Price}) \]
- \[ AQ (SP \times AP) \]
- Where, Price = Rate

#### Material Usage Variances
- \[ MUV = \text{Standard Price} (\text{Std. Quantity} - \text{Actual Quantity}) \]
- \[ SP (SQ - AQ) \]

#### Material Mix Variances
- \[ MMV = \text{Standard Price} (\text{Std. Mix} - \text{Actual Mix}) \]
- \[ SP (SM - AM) \]
- \[ SM = \frac{\text{Total weight of actual quantity}}{\text{Total weight of standard quantity}} \]

#### Material Yield Variances
- \[ MYV = \text{Standard Yield Price} (\text{Std. Yield} - \text{Actual Yield}) \]
- \[ SYP (SY - AY) \]
- \[ SYP = \frac{\text{Total standard Cost}}{\text{Net Standard Output}} \]

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### Labour Variances

#### Labour Cost Variances

- **LCV** = \( (\text{Std. Time} \times \text{Std. Rate}) - (\text{Actual Time} \times \text{Actual Rate}) \)
  - \((\text{ST} \times \text{SR}) - (\text{AT} \times \text{AR})\)

#### Labour Rate Variances

- **LRV** = Actual Time \( (\text{Std. Rate} - \text{Actual Rate}) \)
  - \(\text{AT} (\text{SR} - \text{AR})\)

#### Labour Efficiency Variances

- **LTV** = Standard Rate \( (\text{Std. Time} - \text{Actual Time}) \)
  - \(\text{SR} (\text{ST} - \text{AT})\)

#### Idle Time Variances

- **ITV** = Idle Time \( \times \text{Standard Rate} \)
  - \(\text{IT} \times \text{SR}\)

#### Labour Mix Variances

- **LMV** = Std. Time \( \times (\text{Revised Std. Time} - \text{Actual Time}) \)
  - \(\text{ST} \times (\text{RST} - \text{AT})\)
Overhead Variances

(a) Variable Overhead Cost Variances

**Variable Overhead Cost Variances**

\[ VCOV = (\text{Std. hours for actual Output} \times \text{Std. variable overhead rate}) - \text{Actual overhead cost} \]

• Absorbed V. O. - Actual V. O.

**Variable Overhead Expenditure Variances**

\[ VCOV = (\text{Std. Variable Overhead Rate} \times \text{Actual Hours}) - \text{Actual overhead cost} \]

• Standard V. O. - Actual V. O.

**Variable Overhead Efficiency Variances**

\[ VCEV = (\text{Std. Variable for actual output} - \text{Actual hours}) \times \text{Std. Variable overhead rate} \]

• Absorbed V. O. - Standard V. O.
(b) Fixed Overhead Cost Variances

- **Fixed Overhead Cost Variances**
  - \( \text{FOCV} = (\text{Std. hours for actual output} \times \text{Std. F. O. Rate}) - \text{Actual F. O.} \)
  - (Absorbed Overhead - Actual Overhead)

- **Fixed Overhead Expenditure Variances**
  - \( \text{FOEV} = \text{Budgeted fixed overhead} - \text{Actual fixed overheads} \)

- **Fixed Overhead Volume Variances**
  - \( \text{FOVV} = (\text{Std. hours for actual output} - \text{Budgeted hours}) \times \text{Std rate.} \)
  - = Absorbed overhead – Budgeted overhead
Overhead Variances

Fixed Overhead Volume Variances

**Efficiency Variance**
- \( EV = (\text{Std hours for actual output} - \text{Actual hours}) \times \text{Std rate} \)
- Absorbed Fixed Overhead - Std Fixed Overhead

**Capacity Variance**
- \( CV = (\text{Actual hours worked} - \text{Budgeted hours}) \times \text{Std rate} \)
- Std fixed overhead – budgeted overhead

**Calendar Variance**
- \( CV = (\text{Actual No. of working days} - \text{Std No. of working days}) \times \text{Std rate per day} \)

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In order that a standard costing system may be of maximum value to management, it is essential that reports exhibiting variances from standards for each element of cost of each department and operation should be quickly and efficiently presented to the management.

Essentials of effective variance

- Simple, quick and clear
- It should show the result
- Comparison
- Principle of execution
- Use of charts and graphs

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Efficiency Ratio = \frac{\text{Std hours for actual output}}{\text{Actual hours worked}} \times 100

Activity Ratio = \frac{\text{Std. hours for actual output}}{\text{Budgetary hours}} \times 100

Capacity Ratio = \frac{\text{Actual hours worked}}{\text{Budgeted hours}} \times 100
Practical Problems
Problem – I

A firm has implemented standard costing. The standard of usage fixed for product of 1,000 units is 400 kg, at a price of Rs.2.50 per Kg. When 2,000 were produced it was found that 820 kgs. Of materials were used at Rs. 2.60 per kg. Calculate Material Variances.

Solution – I

We shall calculate three material variances in this example:

**Material Cost Variance** = (Std. x Std. Price) – (Actual Qty. x Actual Price)
= (800 x 2.50) - (820 x 2.60)
= (-132) (U)

**Material Price Variances** = Actual Qty. (Std. Price – Actual Price)
= 820 kgs. (Rs.2.50 –Rs. 2.60)
= (-82) (U)

**Material Usage Variance** = Std. Price (Std. Qty. – Actual Qty)
= Rs.2.50 (800 – 820)
= (-50) (U)
As per the following information calculate labour variances.

(1) Labour Cost Variance
(2) Labour Rate Variance
(3) Labour Efficiency variance
(4) Idle Time Variance

Direct Wages Rs. 3,000
Standard hours produced 1,600
Standard rate per hour 1.50

Actual hours paid 1,500 hours, out of which hours not worked (abnormal idle time) are 50.
### Solution – II

<table>
<thead>
<tr>
<th>(1) LCV =</th>
<th>(Std. time x Std. rate) – (Actual time x Actual rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1600 x Rs. 1.50) – (1500 x Rs. 2)</td>
</tr>
<tr>
<td></td>
<td>Rs. 2,400 – Rs. 3,000</td>
</tr>
<tr>
<td></td>
<td>Rs. 600 (A)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(2) LRV =</th>
<th>Actual Time ((Std. Rate – Actual Rate))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,500 (Rs. 1.50 – Rs. 2.00)</td>
</tr>
<tr>
<td></td>
<td>1,500 (-0.50)</td>
</tr>
<tr>
<td></td>
<td>Rs. 750 (A)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(3) LEV =</th>
<th>Std. Rate (Std. Time – Actual Time)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual Time = Actual hour paid – Abnormal idle time</td>
</tr>
<tr>
<td>LEV</td>
<td>Rs. 1.50 (1,600 – Rs. 1,450)</td>
</tr>
<tr>
<td></td>
<td>Rs. 1.50 x 150</td>
</tr>
<tr>
<td></td>
<td>Rs. 225 (F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(4) ITV =</th>
<th>Idle Time x Standard hourly rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 x Rs. 1.50</td>
</tr>
<tr>
<td></td>
<td>Rs. 75 (A)</td>
</tr>
</tbody>
</table>

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The standard mix to produce one unit of product is as follows:

- Material A: 60 units @ Rs. 15 per unit = Rs. 900
- Material B: 80 units @ Rs. 20 per unit = Rs. 1,600
- Material C: 100 units @ Rs. 25 per unit = Rs. 2,500

240 units = Rs. 5,000

During the month of April, 10 units were actually produced and consumption was as follows:

- Material A: 640 units @ Rs. 17.50 per unit = Rs. 11,200
- Material B: 950 units @ Rs. 18.00 per unit = Rs. 17,100
- Material C: 870 units @ Rs. 27.50 per unit = Rs. 23,925

2460 units = Rs. 52,225

Calculate all material variances.
<table>
<thead>
<tr>
<th>Material</th>
<th>Standard for 10 units</th>
<th>Actual for 10 units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qty</td>
<td>Rate</td>
</tr>
<tr>
<td>A</td>
<td>600</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>800</td>
<td>20</td>
</tr>
<tr>
<td>C</td>
<td>1,000</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>2,400</td>
<td></td>
</tr>
</tbody>
</table>

(1) Material Cost Variance
\[ MCV = \text{Standard cost} - \text{Actual cost} \]
\[ = Rs. 50,000 - Rs.52,225 \] (A)
\[ MCV = Rs.2,225 \] (A)

(2) Material Price Variance
\[ MPV = (\text{St. Price} - \text{Actual Price}) \times \text{Actual Qty} \]

<table>
<thead>
<tr>
<th>Material</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>((15 - 17.50) \times 640) = Rs. 1,600 (A)</td>
</tr>
<tr>
<td>B</td>
<td>((20 - 18) \times 950) = Rs. 1,900 (F)</td>
</tr>
<tr>
<td>C</td>
<td>((25 - 27.50) \times 870) = Rs. 2,175 (A)</td>
</tr>
</tbody>
</table>

MPV = Rs.1,875 (A)
### Material Usage Variance

<table>
<thead>
<tr>
<th>Material</th>
<th>Usage Variance</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material A</td>
<td>$(600 - 640) \times 15 = Rs. 600$</td>
<td>(A)</td>
</tr>
<tr>
<td>Material B</td>
<td>$(800 - 950) \times 20 = Rs. 3,000$</td>
<td>(A)</td>
</tr>
<tr>
<td>Material C</td>
<td>$(1,000 - 870) \times 25 = Rs. 3,250$</td>
<td>(F)</td>
</tr>
<tr>
<td><strong>MUV</strong></td>
<td></td>
<td><strong>Rs. 350</strong> (A)</td>
</tr>
</tbody>
</table>

### Material Mix Variance

<table>
<thead>
<tr>
<th>Material</th>
<th>Mix Variance</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material A</td>
<td>$(615* - 640) \times 15 = Rs. 375$</td>
<td>(A)</td>
</tr>
<tr>
<td>Material B</td>
<td>$(820* - 950) \times 20 = Rs. 2,600$</td>
<td>(A)</td>
</tr>
<tr>
<td>Material C</td>
<td>$(1,025* - 870) \times 25 = Rs. 3,875$</td>
<td>(F)</td>
</tr>
<tr>
<td><strong>MMV</strong></td>
<td></td>
<td><strong>Rs. 900</strong> (F)</td>
</tr>
</tbody>
</table>

### Material Yield Variance

<table>
<thead>
<tr>
<th>Material</th>
<th>Yield Variance</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material A</td>
<td>$(10 - 10.25) \times 5000 = Rs. 1,250$</td>
<td>(A)</td>
</tr>
</tbody>
</table>

---

**Check:**

- **MCV = MPV + MUV**
  - Rs. 2,225 (A) = Rs. 1,875 (A) + Rs. 350 (A)

*Revised Standard Quantity is calculated as follows:

<table>
<thead>
<tr>
<th>Material</th>
<th>Revised Standard Quantity</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$\frac{2460 \times 600}{2400}$</td>
<td>= 615 Units</td>
</tr>
<tr>
<td>B</td>
<td>$\frac{2460 \times 800}{2400}$</td>
<td>= 820 Units</td>
</tr>
<tr>
<td>C</td>
<td>$\frac{2460 \times 1,000}{2400}$</td>
<td>= 1,025 Units</td>
</tr>
</tbody>
</table>

---

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The following information was obtained from the records of a manufacturing firm using standard costing system.

You are required to calculate:

1. Variable overhead variance
2. Fixed overhead variance
   a. Expenditure variance
   b. Volume variance
   c. Efficiency variance
   d. Calendar Variance

<table>
<thead>
<tr>
<th>Particular</th>
<th>Standard</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working days</td>
<td>4,000 units</td>
<td>3,800 units</td>
</tr>
<tr>
<td>Fixed overheads</td>
<td>Rs. 40,000</td>
<td>Rs. 39,000</td>
</tr>
<tr>
<td>Variable overhead</td>
<td>Rs. 12,000</td>
<td>Rs. 12,000</td>
</tr>
</tbody>
</table>

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Solution – III

- Working:
  - (1) Standard Fixed Overhead Rate (per unit) = Rs. 40,000 / 4,000 units = Rs. 10
  - (2) Standard Variable Overhead Rate (per unit) = Rs. 12,000 / 4,000 units = Rs. 3
  - (3) Standard fixed overhead per day = 4,000 / 20 = 200 units.
  - (4) Standard fixed overhead per day = 200 units x Rs. 10 = Rs. 2,000

<table>
<thead>
<tr>
<th>(1) Variable overhead Variance:</th>
<th>(Actual output x Std. variable overhead rate) – Actual variable overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>= (3,800 x Rs. 3) - Rs. 12,000</td>
</tr>
<tr>
<td></td>
<td>= Rs. 11,400 – Rs. 12,000</td>
</tr>
<tr>
<td></td>
<td>= Rs. 600 (A)</td>
</tr>
</tbody>
</table>

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(2) Fixed overhead variance:  
\[
\text{Fixed overhead variance} = \text{Actual output} \times \text{Std. fixed overhead rate} - \text{Actual fixed overhead}
\]
\[
= (3,800 \times \text{Rs. 10}) - \text{Rs. 39,000}
\]
\[
= \text{Rs. 38,000} - \text{Rs. 39,000}
\]
\[
= \text{Rs. 1,000 (A)}
\]

(a) Expenditure Variance:  
\[
\text{Expenditure Variance} = \text{Budgeted fixed overhead} - \text{Actual fixed overhead}
\]
\[
= \text{Rs. 40,000} - \text{Rs. 39,000}
\]
\[
= \text{Rs. 1,000 (F)}
\]

(b) Volume variance:  
\[
\text{Volume variance} = \text{Std. fixed overhead rate} \times (\text{Actual output} - \text{Budgeted output})
\]
\[
= \text{Rs. 10} \times (3,800 - 4,000)
\]
\[
= \text{Rs. 2,000 (A)}
\]
(c) Efficiency Variance:  
\[
\text{= Std. Fixed overhead rate (Actual production – Std. production in actual days)}
\]
\[
\text{= Rs. 10 (3,800 units – 4,200 units)}
\]
\[
\text{= Rs. 4,000 (A)}
\]

(d) Calendar Variance:  
\[
\text{= std. fixed overhead per day (Actual days – Budgeted days)}
\]
\[
\text{= Rs. 2,000 (21 – 20)}
\]
\[
\text{= Rs. 2,000 (F)}
\]