

Statistics Ex 7.3 Q1

## Answer:

## Given:

| Expenditure       | frequency |  |
|-------------------|-----------|--|
| $(in Rs.)(x_i)$ : | $(f_i)$ : |  |
| 100-150           | 24        |  |
| 150 - 200         | 40        |  |
| 200-250           | 33        |  |
| 250-300           | 28        |  |
| 300-350           | 30        |  |
| 350 - 400         | 22        |  |
| 400-450           | 16        |  |
| 450-500           | 7         |  |

Let the assumed mean be A = 275 and h = 50.

| Expenditure<br>(in Rs.) | $Midvalue(x_i)$ : | $frequency\big(f_i\big)$ | $d_i = x_i - A$ $= x_i - 275$ | $u_i = \frac{1}{h}(d_i)$ $= \frac{1}{50}(d_i)$ | $f_i u_i$           |
|-------------------------|-------------------|--------------------------|-------------------------------|--|---------------------|
| 100-150                 | 125               | 24                       | -150                          | -3   | -72                 |
| 150 - 200               | 175               | 40                       | -100                          | -2   | -80                 |
| 200-250                 | 225               | 33                       | -50                           | -1   | -33                 |
| 250-300                 | 275               | 28                       | 0                             | 0  | 0                   |
| 300-350                 | 325               | 30                       | 50                            | 1  | 30                  |
| 350 - 400               | 375               | 22                       | 100                           | 2  | 44                  |
| 400 - 450               | 425               | 16                       | 150                           | 3  | 48                  |
| 450-500                 | 475               | 7                        | 200                           | 4  | 28                  |
|                         |                   | $\sum f_i = 200$         |                               |  | $\sum f_i u_i = -3$ |

We know that mean, 
$$\overline{X} = A + h \left( \frac{1}{N} \sum f_i u_i \right)$$

Now, we have 
$$N=\sum f_i=200, \ \sum f_i u_i=-35, \ h=50$$
 and  $A=275$ 

Putting the values in the above formula, we get

Statistics Ex 7.3 Q2

$$\overline{X} = A + h \left( \frac{1}{N} \sum_{i} f_{i} u_{i} \right)$$

$$= 275 + 50 \left( \frac{1}{200} \times (-35) \right)$$

$$= 275 - \frac{1750}{200}$$

$$= 275 - 8.75$$

$$= 266.25$$

Hence, the average expenditure (in Rs.) per household is 266.25.

## Answer:

We may prepare the table as shown:

| No. of plants | $Midvalue(x_i)$ | No. of Houses $(f_i)$ | $f_i x_i$            |
|---------------|-----------------|-----------------------|----------------------|
| 0-2           | 1               | 1                     | 1                    |
| 2 - 4         | 3               | 2                     | 6                    |
| 4 - 6         | 5               | 1                     | 5                    |
| 6 - 8         | 7               | 5                     | 35                   |
| 8 - 10        | 9               | 6                     | 54                   |
| 10-12         | 11              | 2                     | 22                   |
| 12-14         | 13              | 3                     | 39                   |
|               |                 | $\sum f_i = 20$       | $\sum f_i x_i = 162$ |

We know that mean, 
$$\overline{X} = \frac{\sum f_i x_i}{\sum f_i}$$
 =  $\frac{162}{20}$  = 8.1

Hence, mean = 8.1

Direct method is easier than other methods. Therefore, we used direct method.

\*\*\*\*\*\* END \*\*\*\*\*\*