Exercise 14H

Question 6:

We may prepare the table, given below:

| Marks(x) | No of students (f) | Cumulative Frequency | f × x |
|---|---|---|---|
| 10 | 3 | 3 | 30 |
| 11 | 5 | 8 | 55 |
| 12 | 4 | 12 | 48 |
| 13 | 5 | 17 | 65 |
| 14 | 2 | 19 | 28 |
| 16 | 3 | 22 | 48 |
| 19 | 2 | 24 | 38 |
| 20 | 1 | 25 | 20 |
| | N=25 | | $\sum f \times x = 332$ |

Here, $N = 25$ which is odd

$$\therefore \text{median} = \left(\frac{N+1}{2}\right)\text{th term}$$

$$= \left(\frac{25+1}{2}\right)\text{th term}$$

$$= \text{value of the 13th term}$$

$$= 13$$

Now, $\sum f \times x = 332$ and $\sum f = 25$

$$\therefore \quad \text{mean} = \frac{\sum f \times x}{\sum f} = \frac{332}{25} = 13.28$$

$$\text{Mode} = 3(\text{median}) - 2(\text{mean})$$

$$= (3x\ 13) - (2x13.28)$$

$$= 39 - 26.56$$

$$= 12.44$$

Thus mode = 12.4

Question 7:

We may prepare the table, given below:

| Item(x) | Frequency(f) | Cumulative Frequency | $f \times x$ |
|---|---|---|---|
| 5 | 6 | 6 | 30 |
| 7 | 5 | 11 | 35 |
| 9 | 3 | 14 | 27 |
| 12 | 6 | 20 | 72 |
| 14 | 5 | 25 | 70 |
| 17 | 3 | 28 | 51 |
| 19 | 2 | 30 | 38 |
| 21 | 4 | 34 | 84 |
| | $N=\sum f=34$ | | $\sum f \times x=407$ |

Here, N = 34,which is even .

$$\text{Median} = \frac{1}{2}\left[\left[\left(\frac{n}{2}\right)\right]\text{thterm} + \left(\frac{n}{2}+1\right)\text{th term}\right]$$

$$= \frac{1}{2}\left[(17\text{th term} + 18\text{th term})\right] [\because n = 34]$$

$$= \frac{1}{2}(12+12) = \left(\frac{1}{2}x24\right) = 12$$

Now, $\sum f \times x=407$ and $\sum f=34$

$$\therefore \quad \text{mean} = \frac{\sum f \times x}{\sum f} = \frac{407}{34} = 11.97$$

Mode = 3(median)-2(mean)
=(3x12)-(2x11.97)
= 36-23.94
=12.06
Thus, mode = 12.06

********** END **********