Statistics Ex 7.5 Q3

Answer :

(i) Here, maximum frequency is 28 so the modal class is 40–50.

Therefore,

$l = 40$

$h = 10$

$f = 28$

$f_1 = 12$

$f_2 = 20$

$$\Rightarrow \text{Mode} = l + \frac{f - f_1}{2f + f_1 - f_2} \times h$$

$$= 40 + \frac{28 - 12}{2 \times 28 - 12 - 20} \times 10$$

$$= 40 + \frac{16}{24} \times 10$$

$$= 40 + \frac{80}{12}$$

$$= 40 + 6.67$$

$$\boxed{\text{Mode} = 46.67}$$

(ii) Here, maximum frequency is 75 so the modal class is 20–25.

Therefore,

$l = 20,$

$h = 5$

$f = 75$

$f_1 = 45$

$f_2 = 35$

$$\Rightarrow \text{Mode} = l + \frac{f - f_1}{2f - f_1 - f_2} \times h$$

$$= 20 + \frac{75 - 45}{150 - 45 - 35} \times 5$$

$$= 20 + \frac{30}{70} \times 5$$

$$= 20 + \frac{30}{14}$$

$$= 20 + 2.14$$

$$\boxed{\text{Mode} = 22.14}$$

(iii) Here, maximum frequency is 50 so the modal class is 35–40.

Therefore,

$l = 35$

$h = 5$

$f = 50$

$f_1 = 34$

$f_2 = 42$

$$\text{Mode} = l + \frac{f - f_1}{2f - f_1 - f_2} \times h$$

$$= 35 + \frac{50 - 34}{100 - 34 - 42} \times 5$$

$$= 35 + \frac{\cancel{16}^{2}}{\cancel{24}_{3}} \times 5$$

$$= 35 + \frac{10}{3}$$

$$= 35 + 3.33$$

$$\boxed{\text{Mode} = 38.33}$$

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