Answers :

(1) (a) number of students weighing 39 kg and above = 7

$$\therefore \frac{7}{7+4+13+x} = \frac{20}{100}$$

$$\frac{7}{24+x} = \frac{1}{5}$$

$$35 = 24 + x$$

$$x = 11$$

(b) total number of students = 35

Median position $= \frac{35+1}{2} = 18$

Therefore median weight = 36 – 38 kg

Modal weight = 33 – 35 kg (as most number of students fall wihint this weight range)

(c) Mean weight, $\mu = \frac{4(31)+13(34)+11(37)+5(40)+2(43)}{35}$

$$= \frac{1259}{35}$$

$$= 36.0 \ \text{kg}$$

Standard deviation, $s = \sqrt{\frac{\Sigma f x^2}{\Sigma f} - \mu^2}$

Where $\Sigma f x^2 = 4(31)^2 + 13(34)^2 + 11(37)^2 + 5(40)^2 + 2(43)^2$

$$= 45,629$$

And $\Sigma f = 35$

$$\therefore \quad s = \sqrt{\frac{45,629}{35} - (36)^2}$$

$$= \sqrt{1303.7 - 1296}$$

$$= 2.77$$