

Ans ⑥ It is similar to the method of finding Centroid as it coincides with Centre of gravity.

It is symmetrical about X-Axis, so X-component is zero.

For ABCD area

$$A_{100} \quad a_1 = 50 \times 15$$

$$a_1 = 750 \text{ mm}^2$$

$$x_1 = \frac{50}{2} = 25 \text{ mm}$$

For DEFG area

$$A_{100} \quad a_2 = (100 - 30) \times 15$$

$$a_2 = 1050 \text{ mm}^2$$

$$x_2 = \frac{15}{2} = 7.5 \text{ mm}$$

For PQRS area

$$A_{100} \quad a_3 = 50 \times 15$$

$$a_3 = 750 \text{ mm}^2$$

$$x_3 = \frac{50}{2} = 25 \text{ mm}$$

$$a_1 = 750 \text{ mm}^2 \quad x_1 = 25 \text{ mm}$$

$$a_2 = 1,050 \text{ mm}^2 \quad x_2 = 75 \text{ mm}$$

$$a_3 = 750 \text{ mm}^2 \quad x_3 = 25 \text{ mm}$$

$$\bar{x} = \frac{a_1 x_1 + a_2 x_2 + a_3 x_3}{a_1 + a_2 + a_3}$$

$$= \frac{750 \times 25 + 1,050 \times 75 + 750 \times 25}{750 + 1,050 + 750}$$

$$\bar{x} = 17.8 \text{ mm}$$