● **Example 13.1** *Three point masses 'm' each are placed at the three vertices of an equilateral triangle of side 'a'. Find net gravitational force on any one point mass.*

Solution We are finding net force on the point mass kept at O.

$$F = \frac{G(m)(m)}{a^2} = \frac{Gm^2}{a^2}$$

Since, the two forces are equal in magnitudes, therefore the resultant force will pass through the centre as shown in figure.

$$F_{net} = \sqrt{F^2 + F^2 + 2(F)(F)\cos 60^\circ}$$

$$= \sqrt{3}F$$

$$= \frac{\sqrt{3}Gm^2}{a^2}$$

Ans.

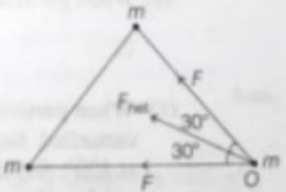

Fig. 13.6