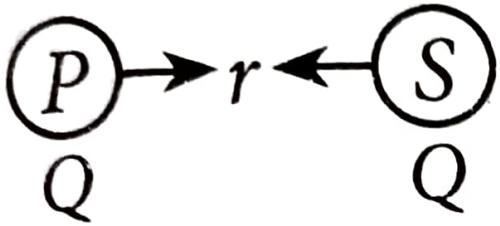
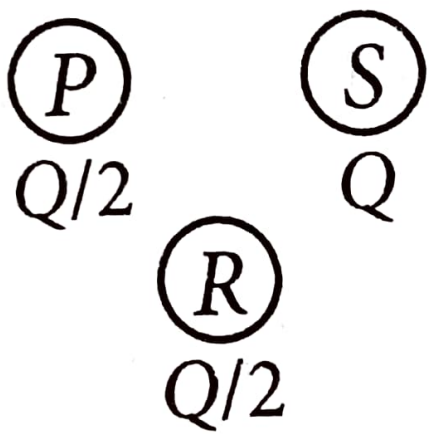


$$F_{PS} = 16\ \text{N} = K \cdot \frac{Q^2}{r^2} \qquad \ldots(\text{i})$$

When P and R are in contact,



When S and R are in contact,

Since the distance between sphere P and S does not change, the new force (F'_{PS}) between the spheres is,

$$F'_{PS} = \frac{k \cdot Q \times 3Q}{8 \times r^2} = \frac{3}{8} \cdot \frac{kQ^2}{r^2}$$

Using equation (i),

$$F'_{PS} = \frac{3}{8} \times 16 = 6\ \text{N} \qquad \text{(from (i))}$$