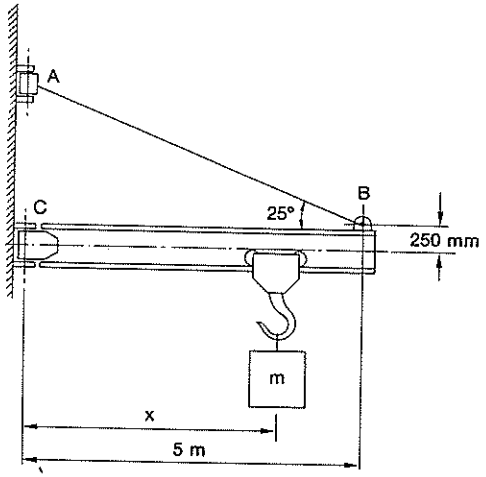

Fig. 4.16

4.11 A beam is subjected to a load of 10 kN as shown in Figure 4.17. Determine the support reactions at each end for $\theta = 20°, 40°$ and $60°$.

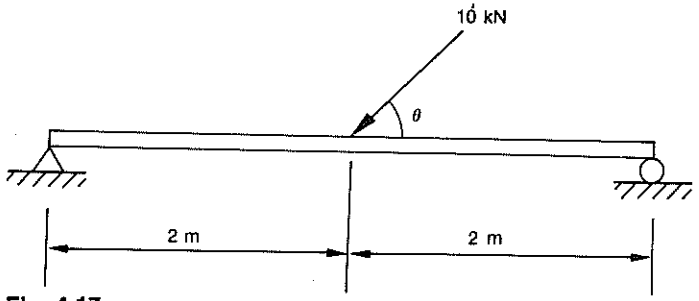

Fig. 4.17

4.12 A street light has a mass of 20 kg and is supported as shown in Figure 4.18. Determine the reactions at *A* and *B*.

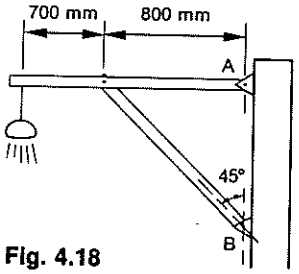

Fig. 4.18

4.13 An advertising sign is supported as shown in Figure 4.19. Determine the force in *AB* and the reaction at *C* if the mass of the sign is 30 kg.

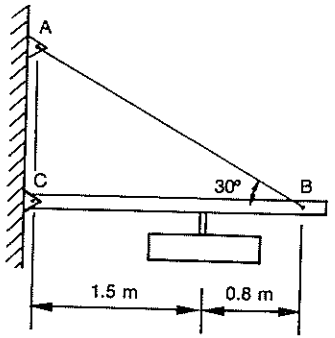

Fig. 4.19

H/W. **4.14** Determine the force F required to start to tip the cabinet shown (Fig. 4.20) about *A*, assuming it is not going to slide. Determine also the reaction at *A*. The mass of the cabinet is 50 kg.

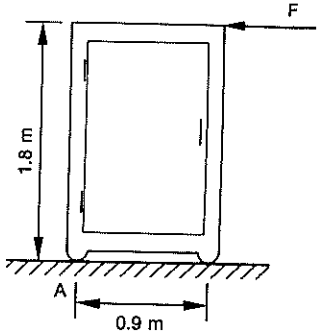

Fig. 4.20

4.15 A pin-jointed frame supporting a score board is subjected to a horizontal wind load as shown in Figure 4.21. Determine reactions at *A* and *B*.

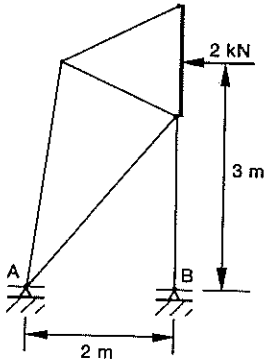

Fig. 4.21

4.16 A ladder rests on a rough floor surface and against a smooth wall as shown in Figure 4.22. Neglecting the mass of the ladder, determine the reactions at *A* and *B* when a man of mass 85 kg climbs to a point on the ladder as shown.

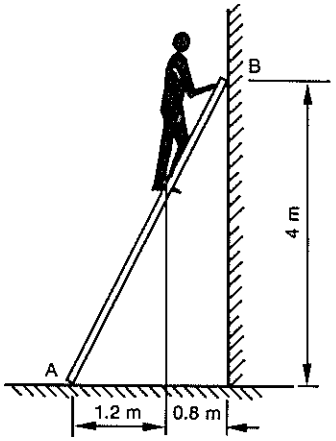

Fig. 4.22

4.17 Determine the force F required to pull a 500 mm diameter roller, having a mass of 100 kg, over a step 60 mm high, and the reaction at the point of contact (see Fig. 4.23).

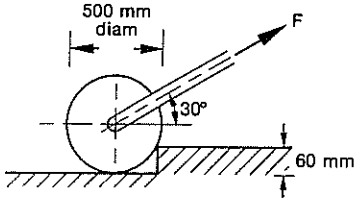

Fig. 4.23

4.18 Find the force in cable *AB* and reaction at *C* when a load of 500 kg is supported by a flexible rope passing over a sheave as shown in Figure 4.24.

4.19 The door in Figure 4.25 is held in closed position by tension in the spring equal to 70 N. Determine the reaction at the hinge.

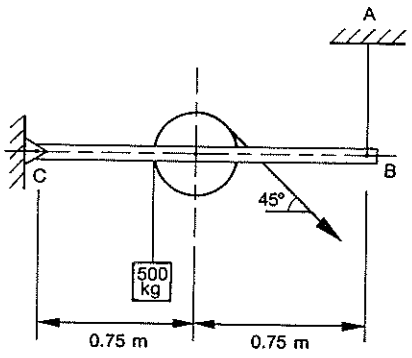

Fig. 4.24

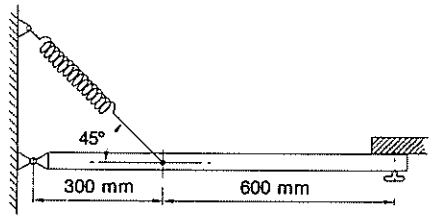

Fig. 4.25

4.20 For each metre of its length, the retaining wall shown in Figure 4.26 has a mass of 1.8 tonnes and the pressure of the Earth behind it is equivalent to a force of 7.57 kN. The point at which the reaction at the base can be regarded as applying is point *A*. Determine the reaction in magnitude and direction and the position *x* of point *A*.

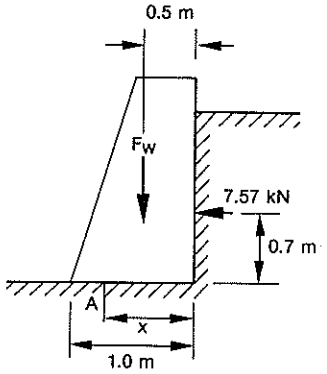

Fig. 4.26