

Answer **all** the questions in the spaces provided.

- 1 (a) State the conditions for a rigid body to be in static equilibrium.

.....  
.....  
.....

[2]

- (b) A uniform rigid rod of mass 30 kg is attached to a vertical wall by a hinge as shown in Fig. 1.1. The other end of the rod is held to the ceiling by a cable.

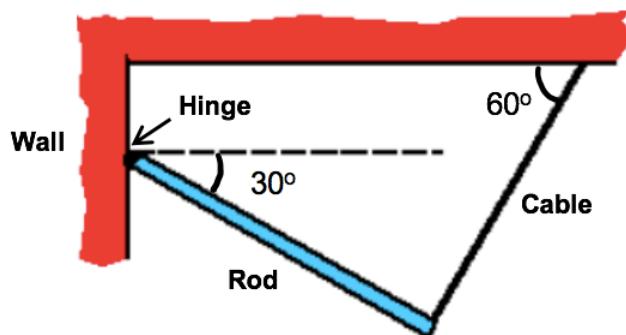


Fig. 1.1

- (i) Draw the forces acting on the rod in Fig. 1.1. Label all the forces clearly.

[2]

- (ii) Show that the tension  $T$  in the cable is 127 N.

[2]

- (iii) Determine the magnitude and direction of the force acting on the rod by the hinge.

force = ..... N [2]

direction = ..... [2]

[Total: 10]