3

(a)

Define *moment of a force*.

....

....

[1]

(b)

A uniform rod of length *L* with weight 400 N is attached to a vertical wall by strong adhesive as shown in Fig. 3.1. The other end of the rod is fastened to an inextensible rope. The structure is used to support a metal load of weight 2000 N.

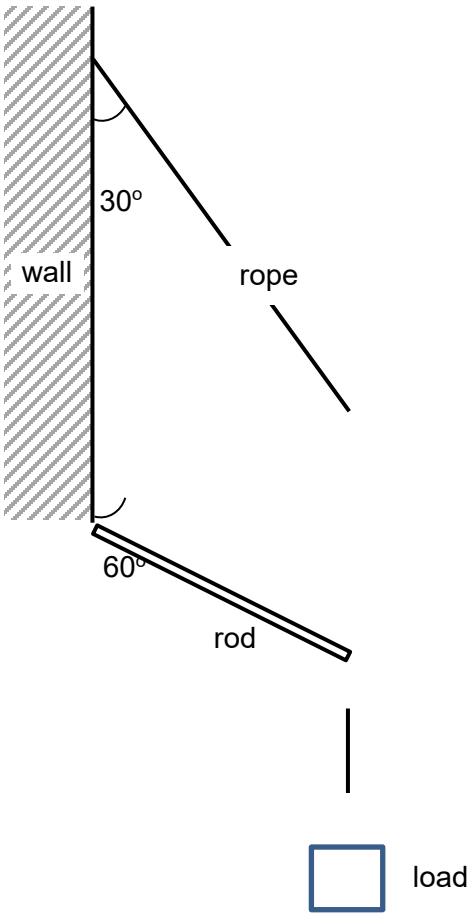

Fig. 3.1

(i)

Calculate the tension in the rope.

tension = …… N

[3]

(ii)

On Fig. 3.2, draw an arrow, ***R***, to show **the force on the wall** by the rod. Show your working clearly. Include the construction of line of forces.

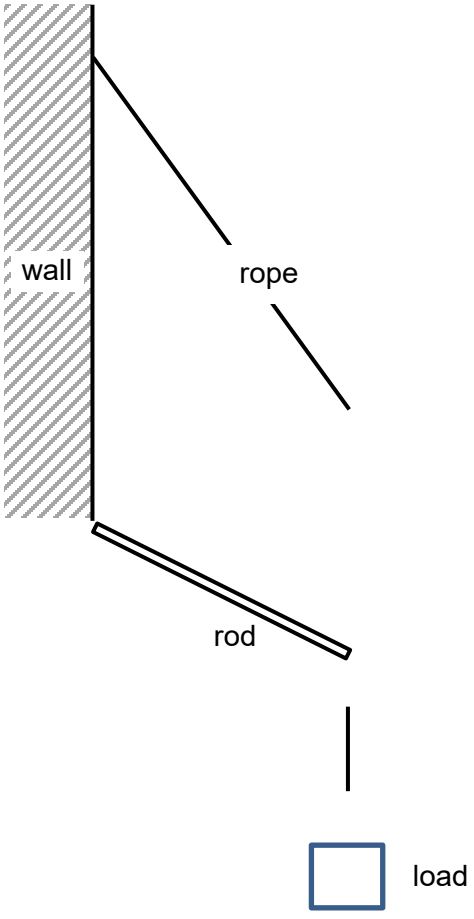

Fig. 3.2

[1]

(c)

The metal load is now submerged in water as shown in Fig. 3.3.

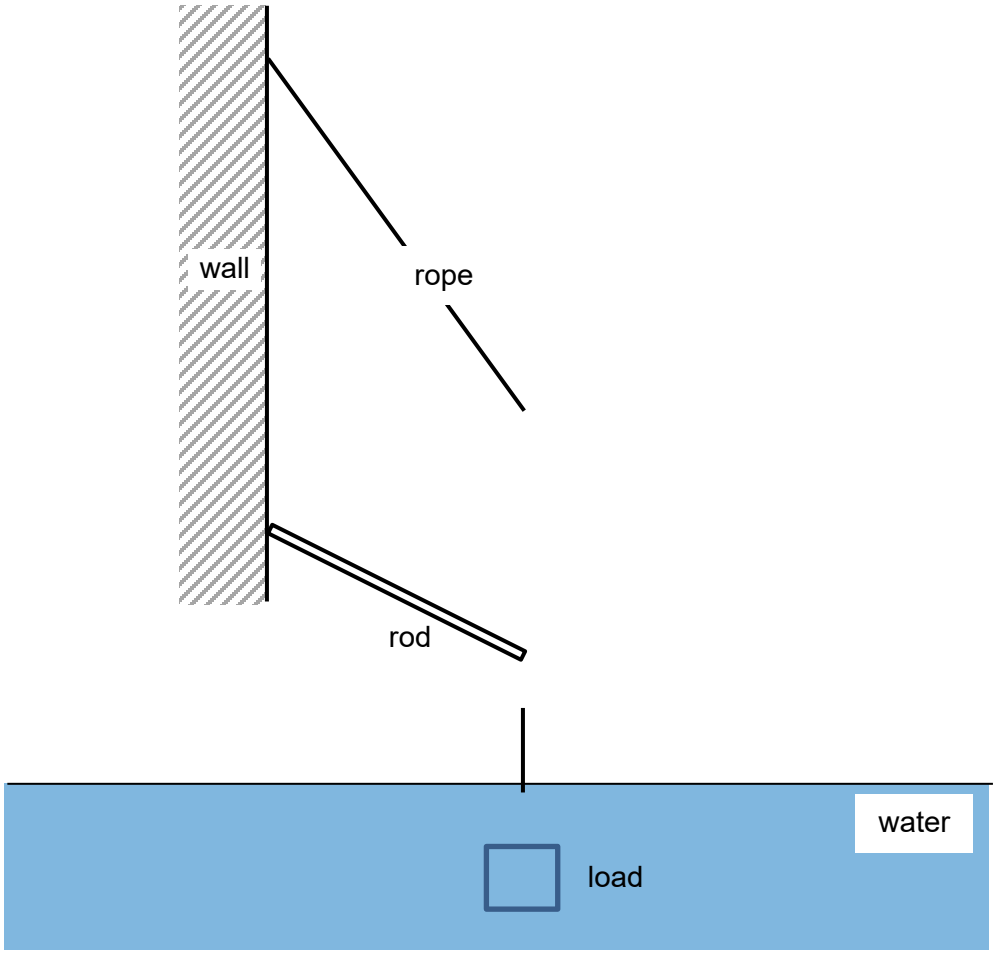

Fig. 3.3

The positions of the rope and rod remain the same.

Suggest how this affects your answer in **(b)(ii)**, if any.

.....

.....

....

[2]