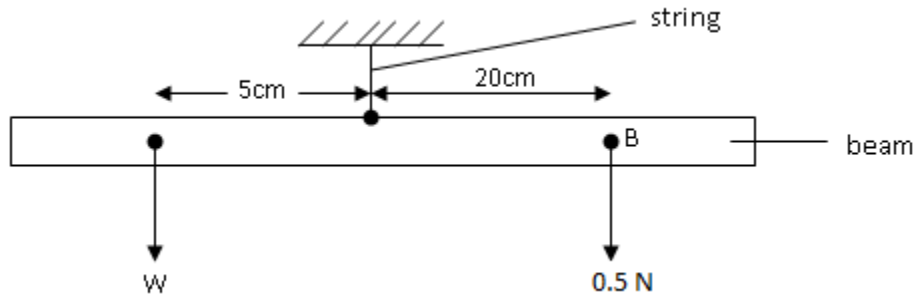


Instructions: *Attempt all questions.*

1. (a) State two ways of increasing stability of a body. (2marks)

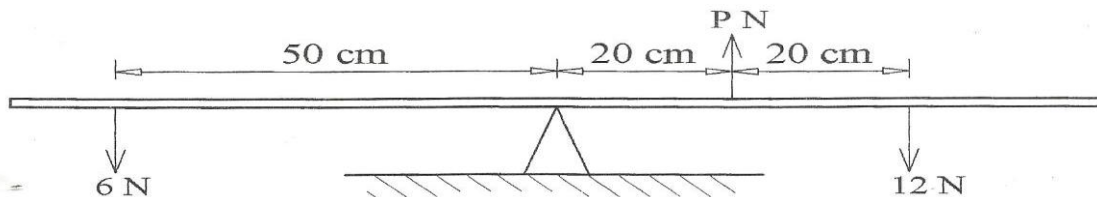
(b)



The figure above shows a beam of weight, W suspended on a string balancing with a mass of weight 0.5N hang at B . Calculate the tension, T in the string.

(4marks)

2. Three forces act on a uniform rod as shown in figure below.



If the rod balances horizontally,

- (i) determine the value of p , (3 marks)

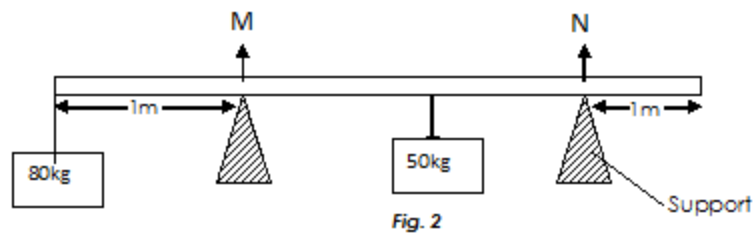
(ii) Find the normal reaction at the pivot (knife edge).

3. (a) (i) Define moment of a force about a point.

(ii) State the conditions for equilibrium of a rigid body under action of a number of parallel forces.

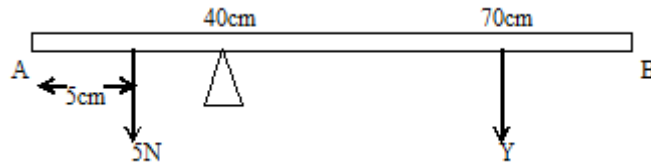
(b) A uniform metre rule freely pivoted at the 15cm mark balances horizontally when a 40g mass is suspended from its 5cm mark. Find the mass of the metre rule.

4. A box of mass 80kg is tied at one end of a uniform piece of timber resting on two supports 1 m from each end as shown below.



If the piece of timber is 10m long and has a mass of 50kg. Find the force on each support.

5.



The figure shows forces of 5N and YN acting on beam AB which is 100cm long. Find the value of Y.

6. (a) State the conditions for a body to be in

(i) Stable equilibrium.

(1 mark)

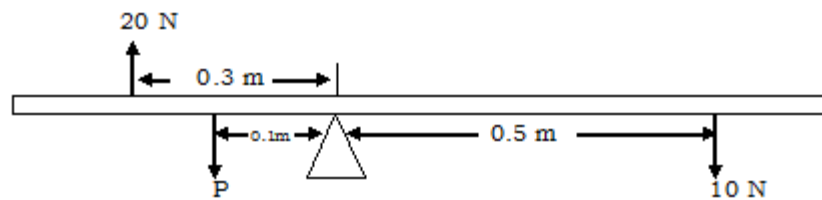
(ii) Neutral equilibrium

(1 mark)

(iii) Explain why bus passengers luggage is loaded in the boots rather than the rack on top of the bus. (3 marks)

(b) Describe an experiment to find the mass of an object using a metre rule and a single known mass. (6 marks)

- (c) Forces of 20 N, 10N and P act on a uniform rod pivoted at its centre as shown below. Find the magnitude of P if the system is in equilibrium. (4 marks)



- (i) State two applications of the principle of moments (2 marks)
- (ii) Draw a diagram to show the forces acting on an object resting on table. (2 marks)

END.

