Section A

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

1 Fig. 1.1 shows a hinged beam of length 60.0 cm held horizontally against a wall by a cord XY.

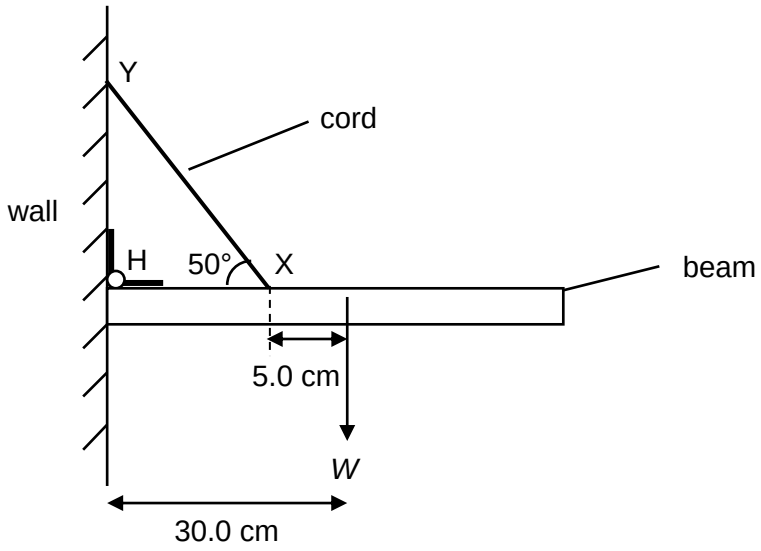

Fig. 1.1

The forces acting on the beam are its weight *W*, the force *T* exerted by the cord, and the force *R* exerted by the hinge H.

(a) In the space provided below, sketch a labelled vector triangle of the forces acting on the beam.

[2]

(b) The weight of the uniform beam is 40.0 N and the mass of the cord is negligible.

Calculate the magnitude of

(i) the tension *T*,

T = ... N [2]

(ii) the force *R*.

R = ... N [2]

(c) A brick is placed on the beam at X without the cord snapping. Subsequently, when the brick is shifted further away from the hinge along the beam, the cord snaps.

Explain why the cord snaps.

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..... [2]

[Total: 8]