6.

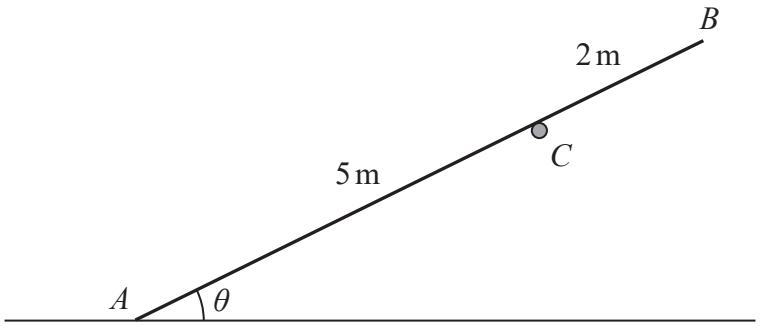


Figure 5

A uniform beam AB, of weight 40 N and length 7 m, rests with end A on rough horizontal ground.

The beam rests on a smooth horizontal peg at C, with $AC = 5$ m, as shown in Figure 5.

The beam is inclined at an angle θ to the ground, where $\sin\theta = \frac{3}{5}$

The beam is modelled as a rod that lies in a vertical plane perpendicular to the peg.

The normal reaction between the beam and the peg at C has magnitude P newtons.

Using the model,

(a) show that $P = 22.4$

(3)

(b) find the magnitude of the resultant force acting on the beam at A.

(6)

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Question 6 continued

(Total for Question 6 is 9 marks)