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5.

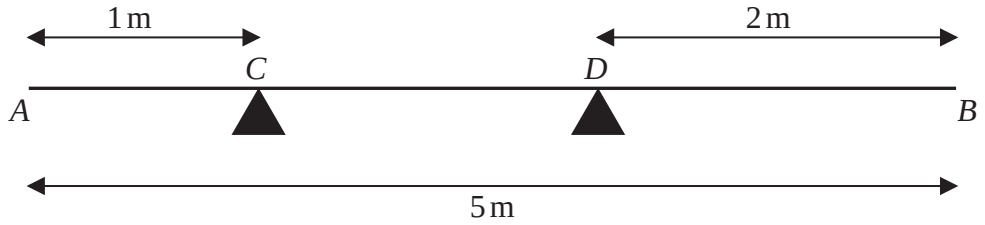

Figure 2

A uniform rod AB has length 5 m and mass 5 kg. The rod rests in equilibrium in a horizontal position on two supports C and D, where $AC = 1$ m and $DB = 2$ m, as shown in Figure 2.

A particle of mass 10 kg is placed on the rod at A and a particle of mass M kg is placed on the rod at B. The rod remains horizontal and in equilibrium.

(a) Find, in terms of M, the magnitude of the reaction on the rod at C.

(3)

(b) Find, in terms of M, the magnitude of the reaction on the rod at D.

(3)

(c) Hence, or otherwise, find the range of possible values of M.

(3)

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Question 5 continued

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Question 5 continued

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Question 5 continued

Q5

(Total 9 marks)