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7.

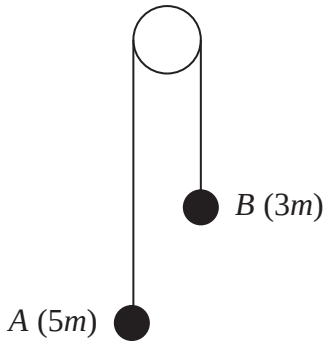

Figure 4

One end of a light inextensible string is attached to a particle A of mass $5m$. The other end of the string is attached to a particle B of mass $3m$. The string passes over a small, smooth, light fixed pulley. Particle A is held at rest with the string taut and the hanging parts of the string vertical, as shown in Figure 4.

Particle A is released.

(a) Find, in terms of m and g, the magnitude of the force exerted on the pulley by the string while A is falling and before B hits the pulley.

(8)

(b) State how, in your solution to part (a), you have used the fact that the pulley is smooth.

(1)

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Question 7 continued

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Question 7 continued

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Question 7 continued

(Total 9 marks)

Q7