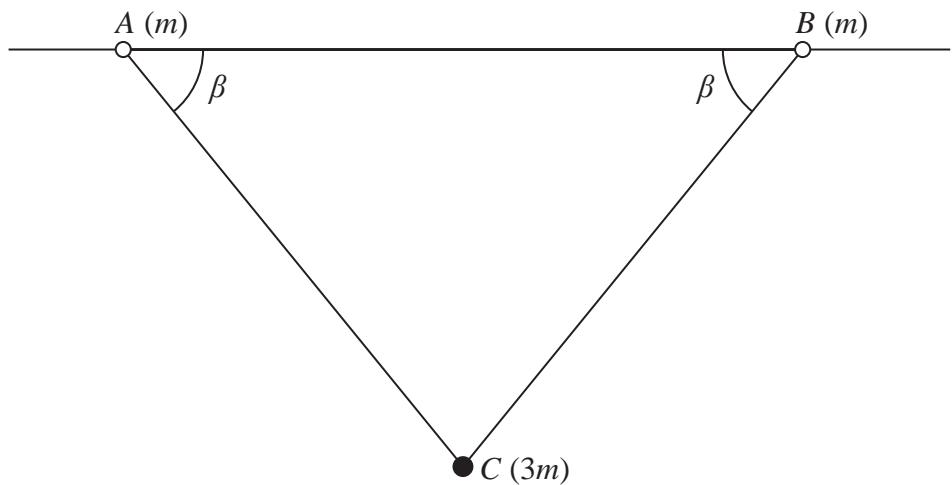


Leave
blank

4.

**Figure 2**

Two identical small rings, A and B , each of mass m , are threaded onto a rough horizontal wire. The rings are connected by a light inextensible string. A particle C of mass $3m$ is attached to the midpoint of the string. The particle C hangs in equilibrium below the wire with angle $BAC = \beta$, as shown in Figure 2.

The tension in each of the parts, AC and BC , of the string is T

- (a) By considering particle C , find T in terms of m , g and β (2)
- (b) Find, in terms of m and g , the magnitude of the normal reaction between the wire and A . (3)

The coefficient of friction between each ring and the wire is $\frac{4}{5}$

The two rings, A and B , are on the point of sliding along the wire towards each other.

- (c) Find the value of $\tan\beta$ (5)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 4 continued

Leave blank



P 6 1 2 9 3 A 0 1 1 2 4

Leave
blank

Question 4 continued



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

Question 4 continued

Leave
blank

Q4

(Total 10 marks)

