Leave blank

5.

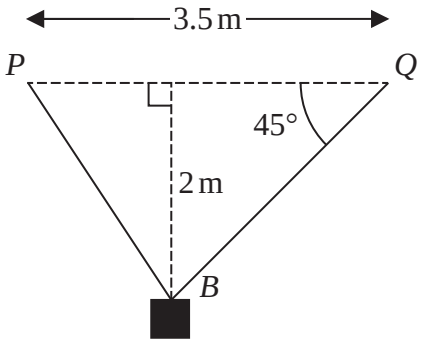

Figure 3

A small metal box of mass 6 kg is attached at B to two ropes BP and BQ. The fixed points P and Q are on a horizontal ceiling and $PQ = 3.5$ m. The box hangs in equilibrium at a vertical distance of 2 m below the line PQ, with the ropes in a vertical plane and with angle $BQP = 45°$, as shown in Figure 3. The box is modelled as a particle and the ropes are modelled as light inextensible strings. Find

(i) the tension in BP,

(ii) the tension in BQ.

(10)

Leave blank

Question 5 continued

Q5

(Total 10 marks)