**1** *A uniform rod PQ, has weight* 300 *N. It hangs in a horizontal position, supported by two light*

*inextensible strings at R and S, where PR* = 1.4 *m, and RS* = 1.5 *m.*

*The tension in the string at S is* 220 *N. Calculate:*

*(a) The tension in the string at R,*

*(b) The length of the rod.*

**2** *A uniform beam AB of length 5 m and weight 200 N rests in equilibrium on supports C and D where AC = 0.5 m and BD = 1.5 m. A particle of mass 10 kg is attached at A.*

*Find the largest weight W which can be applied at B for the beam to remain in equilibrium.*

**3** *A uniform ladder AB of length 4 m and mass 20 kg rests against a smooth vertical wall, with its feet on a rough horizontal ground. The coefficient of friction between the ladder and the ground is μ. The ladder is inclined at 60° to the horizontal. If a boy of mass 30 kg climbs up to the end B without it slipping, find the value of μ.*