4 A spring balance is used to weigh a cylinder that is immersed in oil, as shown in Fig. 4.1.
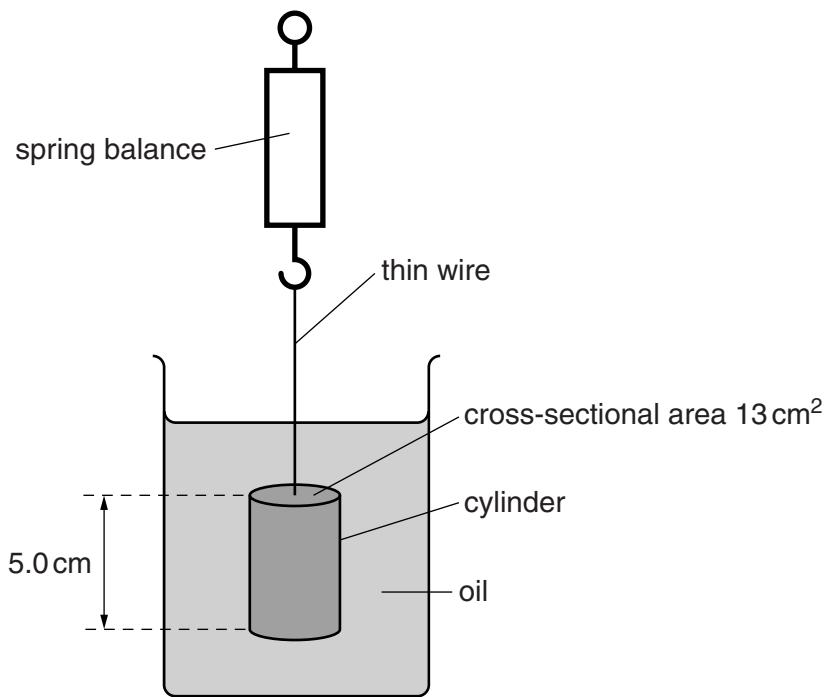

spring balance

thin wire

cross-sectional area 13 cm²

cylinder

5.0 cm

oil

Fig. 4.1

The reading on the spring balance is 4.8 N. The length of the cylinder is 5.0 cm and the cross-sectional area of the cylinder is 13 cm². The weight of the cylinder is 5.3 N.

(a) The cylinder is in equilibrium when it is immersed in the oil. Explain this in terms of the forces acting on the cylinder.

....

.... [1]

(b) Calculate the density of the oil.

density = ... kg m⁻³ [3]

[Total: 4]

 [Turn over