Oxford Cambridge and RSA

A Level Physics A

H556/01 Modelling physics

Question Set 4

1 Fig. 16 shows a hydraulic jack used to lift a car which has a mass of 1200 kg. A mechanic exerts a downwards force of 400 N on the handle of the jack, moving it 80.0 cm downwards. As he moves the handle, the car rises 2.0 cm.

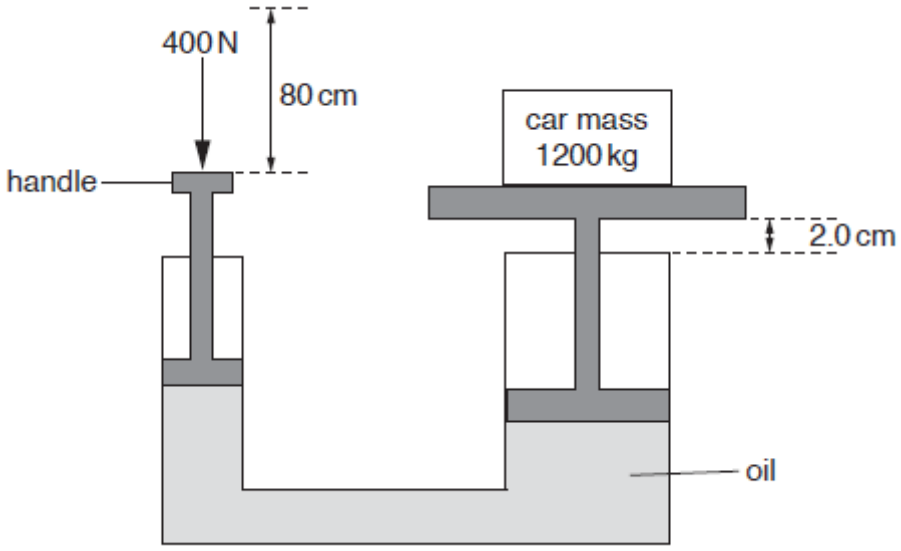

Fig. 16

(a) Calculate the work done by the 400 N force exerted by the mechanic.

work done = ... J **[2]**

(b) Calculate the ratio

$$\frac{\text{speed of handle moving down}}{\text{speed of car moving up}}.$$

ratio = ... **[2]**

(c) Calculate the useful work done on the car and hence the percentage efficiency of the jack.

efficiency = ...% **[2]**

Total Marks for Question Set 4: 6