

A Level Physics A
H556/01 Modelling physics

Question Set 17

1 Fig. 21 shows the drum of a washing machine.

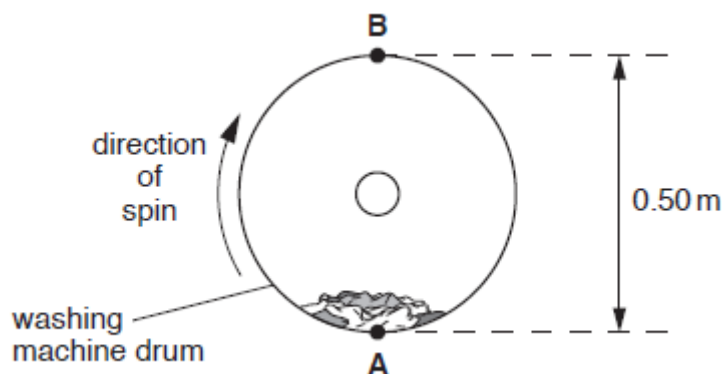


Fig. 21

The clothes inside the drum are spun in a **vertical** circular motion in a clockwise direction.

- (a) When the drum is at rest, the weight of the clothes is equal to the normal contact force on the clothes at point A.

Explain why these two forces are not an example of Newton's Third Law of motion. [2]

- (b) The drum has diameter 0.50 m. The manufacturer of the washing machine claims that the drum spins at 1600 ± 100 revolutions per minute.

Calculate the speed of rotation of the drum and the absolute uncertainty in this value.

$$\text{speed} = \dots \pm \dots \text{ ms}^{-1} \quad [3]$$

- (c) The washing machine is switched off and the speed of the drum slowly decreases. The clothes at the top of the drum at point B start to drop off at a certain speed v .

At this speed v , the normal contact force on the clothes is zero.

Calculate the speed v .

$$v = \dots \text{ ms}^{-1} \quad [3]$$

Total Marks for Question Set 17: 8

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