

Topic 4 Friction

Past Paper Questions

Q1. If a block of steel of mass 50 kg requires a horizontal force of 70N to cause it to slide along a horizontal plane. Calculate

- a. The coefficient of friction between the block and the plane (3M)
- b. The acceleration and the distance travelled in 4 seconds from rest if a horizontal force of 80N is applied (7M)

Q2. A body has a mass of 23 kg and is subject to a force applied parallel to the horizontal plane. Calculate

- a. The least horizontal force required just to cause motion when the coefficient of friction is 0.41 (4M)
- b. The reduction in effort needed to move the body as a percentage of the original force if the coefficient of friction is now reduced by 0.15 (6M)

Q3. A block of mass 'm' kg is pulled across a horizontal plane by a rope attached to the block, the pull being inclined at angle θ° to the horizontal. The tension in the rope is 'F' N which is just sufficient to move the block with constant velocity.

- a. Sketch the block on the surface and show all the forces associated with it (4M)
- b. If 'm' is 20kg, θ is 25° and the force in the rope is 40N determine the coefficient of friction between the block and the plane (6M)