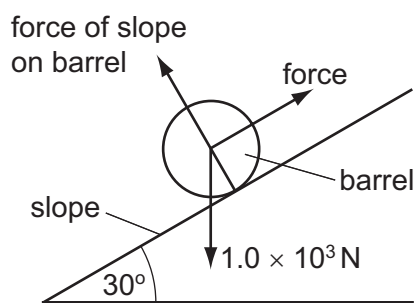


- 17 The diagram shows a barrel of weight  $1.0 \times 10^3 \text{ N}$  on a frictionless slope inclined at  $30^\circ$  to the horizontal.



A force is applied to the barrel to move it up the slope at constant speed. The force is parallel to the slope.

What is the work done in moving the barrel a distance of 5.0 m up the slope?

- A**  $2.5 \times 10^3 \text{ J}$       **B**  $4.3 \times 10^3 \text{ J}$       **C**  $5.0 \times 10^3 \text{ J}$       **D**  $1.0 \times 10^4 \text{ J}$
- 18 A car travelling on a level road at a steady  $20 \text{ m s}^{-1}$  against a constant resistive force develops a power of 40 kW.

What is the magnitude of the resistive force?

- A** 200 N      **B** 800 N      **C** 2000 N      **D** 4000 N
- 19 A turbine at a hydroelectric power station is situated 30 m below the level of the surface of a large lake. The water passes through the turbine at a rate of  $340 \text{ m}^3$  per minute.

The overall efficiency of the turbine and generator system is 90%.

What is the output power of the power station? (The density of water is  $1000 \text{ kg m}^{-3}$ .)

- A** 0.15 MW      **B** 1.5 MW      **C** 1.7 MW      **D** 90 MW

**Space for working**