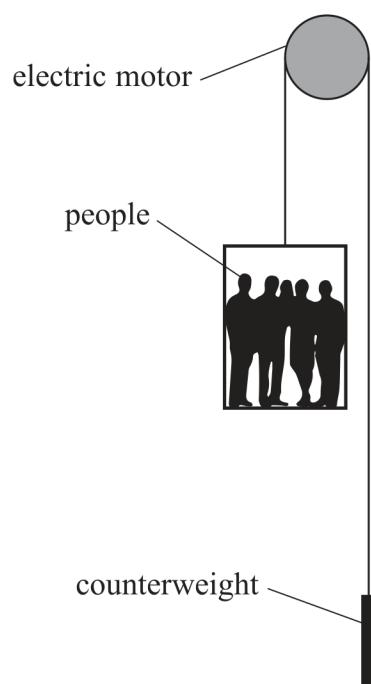


- 12 The diagram shows a lift system for moving people up and down a tall building. There is a counterweight to balance the weight of the lift. An electric motor is used to raise and lower the lift.



- (a) Explain how the counterweight affects the amount of work required from the electric motor to raise the lift.

(2)

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- (b) The electric motor raises the lift through a height of 40.0 m in a time of 30.0 s.

Show that the output power of the electric motor is about 12 kW.

total mass of lift and people = 2 250 kg

mass of counterweight = 1 300 kg

(4)

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- (c) The electric motor dissipates energy to the surroundings at a rate of 3 600 W.

Determine the efficiency of the electric motor.

(2)

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Efficiency = .....