11 A student drives a go-kart up a slope.

(a) The slope is at an angle of 5.7° to the horizontal. The go-kart moves with a constant velocity of 2.8 m s^{-1}.

Calculate the power of the go-kart.

mass of go-kart and driver = 60 kg
resistive force on the go-kart = 18 N

(4)

Power = ...

(b) The go-kart is powered by a battery connected to a motor. The rate of thermal energy transfer by the wiring in the motor is 55 W.

Calculate the resistance of the wiring in the motor.

current in motor = 24 A

(2)

Resistance of the wiring in the motor = ...

(Total for Question 11 = 6 marks)