Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 3_Conservation Of Energy

Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

(i) The aircraft lands with a velocity of 71 m/s.

The mass of the aircraft is 3.6 × 105 kg.

Calculate the kinetic energy of the aircraft as it lands.

(2)

kinetic energy of aircraft = ... J

(ii) When the aircraft has come to a stop, all the kinetic energy has been transferred to the surroundings.

Give **one** way that the energy has been transferred to the surroundings.

(1)

.....

.....

(Total for question = 3 marks)

Q2.

In a science fiction story, lightning is used as an energy source for accelerating a car.

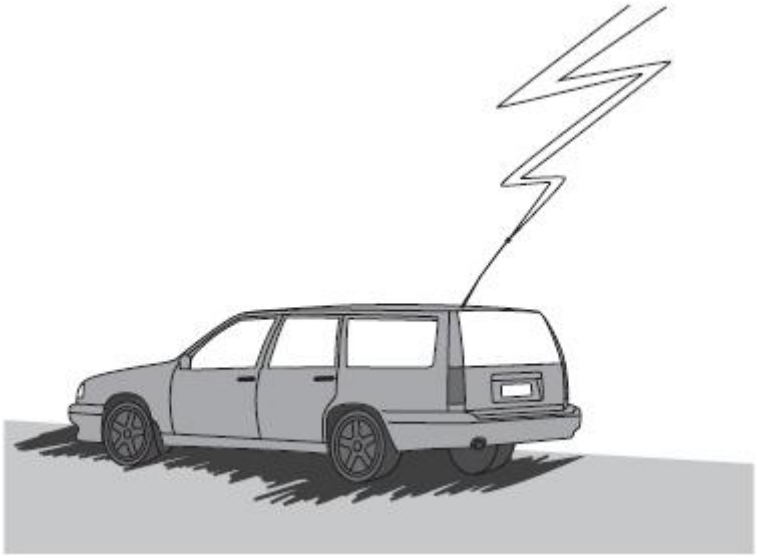

Figure 6

In the story, the car has a kinetic energy of 960 kJ at a speed of 40 m/s.

(i) Calculate the mass of the car.

(4)

mass = ... kg

(ii) Only 5% of the energy of the lightning bolt is transferred to the kinetic energy of the car.

Calculate the total energy of the lightning bolt in MJ.

(2)

energy = ... MJ

(Total for question = 6 marks)

Q3.

A kettle is used to heat water.

Figure 11 shows a graph of temperature against time for the water in the kettle.

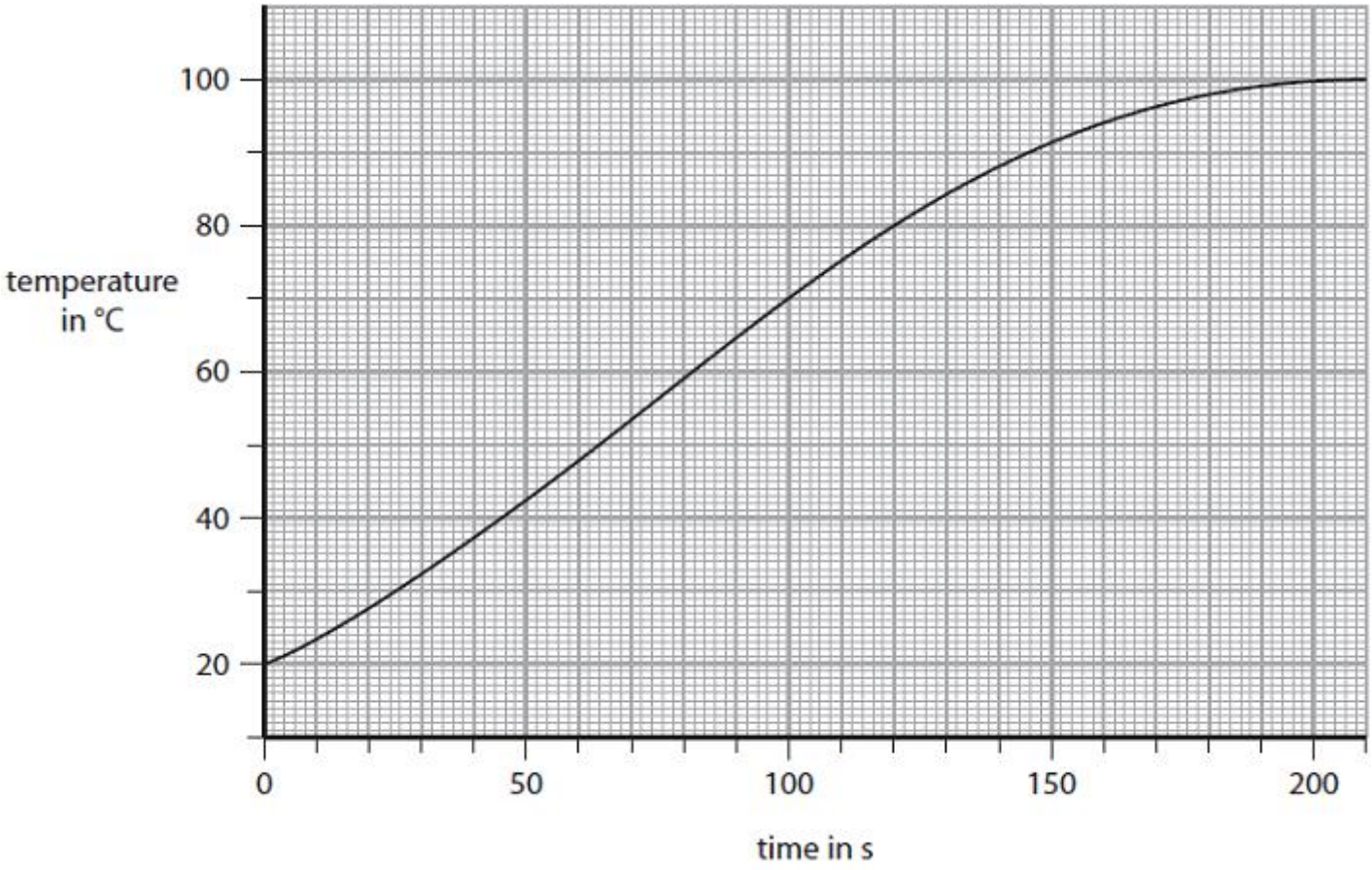

Figure 11

Calculate the rate of increase in temperature at a time of 150 s, by drawing a tangent to the curve in Figure 11 at a time of 150 s.

(3)

..... °C / s

(Total for question = 3 marks)

Q4.

Figure 2 shows a person on a skateboard at the top of a ramp.

At P, the person is not moving.

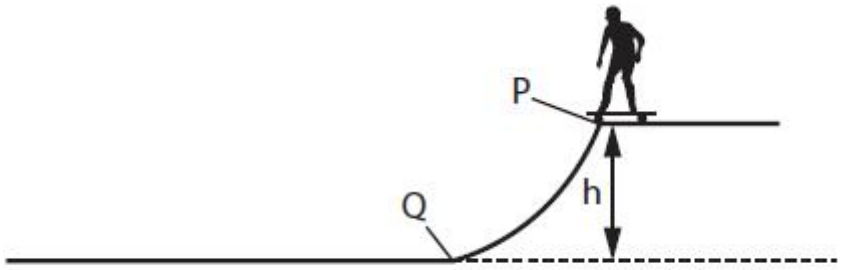

Figure 2

The kinetic energy, KE, of the person at Q is 950 J.

The mass of the person is 35 kg.

Calculate the velocity of the person at Q.

Use the equation

$$v^2 = \frac{2 \times KE}{m}$$

(3)

velocity = ... m/s

(Total for question = 3 marks)

Q5.

A kettle is used to heat water.

The kettle has an efficiency of 91% in supplying energy to the water.
The thermal energy of the water increases by 3.3×10^5 J in 200 s.

Calculate the total amount of energy supplied to the kettle in the 200 s.

Use the equation

$$\text{efficiency} = \frac{\text{(useful energy transferred by the device)}}{\text{(total energy supplied to the device)}}$$

(2)

total amount of energy supplied = ... J

(Total for question = 2 marks)