Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 3_ Conservation of Energy

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

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

The mass of the aircraft is 3.6×10^5 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.

Figure 1 shows a person on a skateboard at the top of a ramp.

At P, the person is not moving.

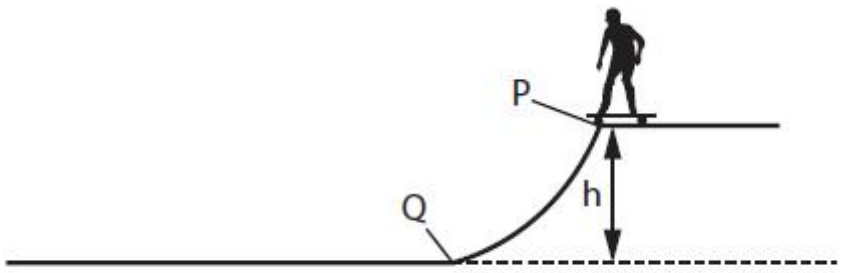

Figure 1

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)

Q3.

(i) A microwave oven uses waves of frequency 2.45 GHz.

Calculate the wavelength of the microwaves.
The velocity of light is 3.00×10^8 m/s.

(3)

wavelength = ... m

(ii) The microwave oven is 55% efficient and transfers 42 000 J of energy to some food when it is heated.

Calculate the total amount of energy that must be supplied to the oven.

(3)

energy supplied to oven = ... J

(Total for question = 6 marks)

Q4.

A student lifts a toy car from a bench and places the toy car at the top of a slope as shown in Figure 1.

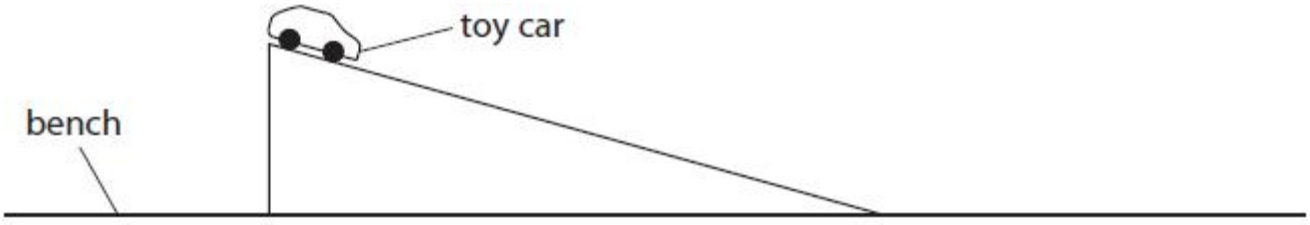

Figure 1

Describe an energy transfer that occurs when the student lifts the toy car from the bench and places the toy car at the top of the slope.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q5.

Expanded polystyrene, used to insulate buildings, has different densities.

Figure 2 shows how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

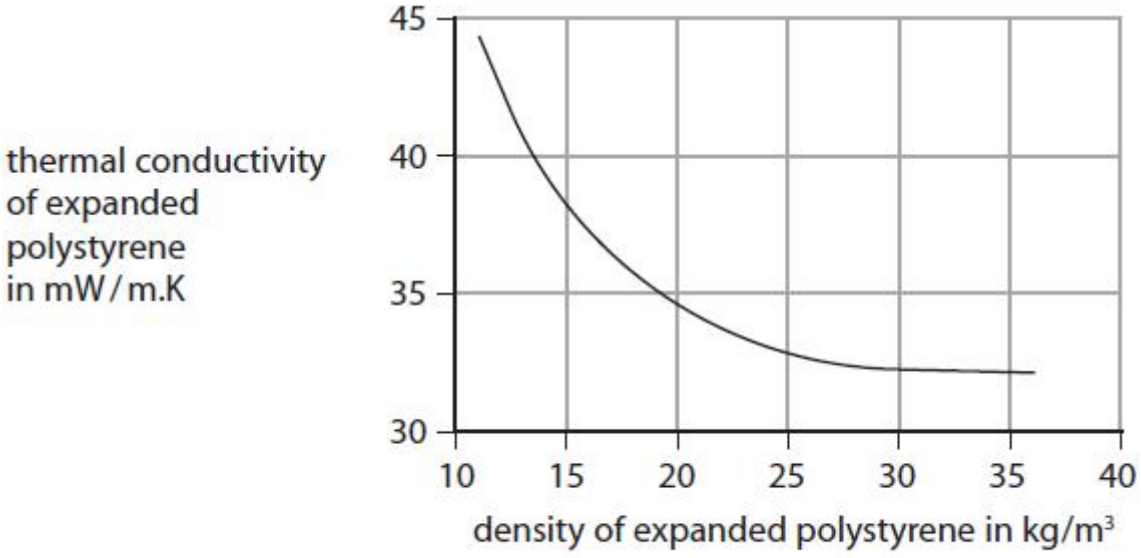

Figure 2

Using the graph in Figure 2, describe how the thermal conductivity of expanded polystyrene changes with the density of expanded polystyrene.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q6.

A student uses the apparatus in Figure 1 to find out which of two materials, sand or sawdust, is the better insulator.

Figure 1

The student also has a kettle to boil water, a thermometer and a stop clock.

(i) Draw a labelled diagram to show how the student should set up the equipment to investigate which material is the better insulator.

(3)

(ii) Give **three** factors that the student must control in this investigation.

(3)

1 .....

.....

2 .....

.....

3 .....

.....

(Total for question = 6 marks)