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

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

A cyclist of mass 70 kg travels at a constant velocity of 8 m/s.
Calculate the kinetic energy of the cyclist.

(3)

kinetic energy of the cyclist = ... J

(Total for question = 3 marks)

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Q2.

A model train has a mass of 8.0 kg.
It travels at a speed of 1.5 m/s.

Calculate the kinetic energy of the model train.

Use the equation

$$\text{kinetic energy} = \tfrac{1}{2} \times \text{mass} \times (\text{speed})^2$$

(3)

kinetic energy = ... J

(Total for question = 3 marks)

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Q3.

Some technicians are investigating factors affecting the braking distance of a bicycle.
They start by investigating how the speed of a bicycle affects the braking distance.

Figure 8 is a graph of their results.

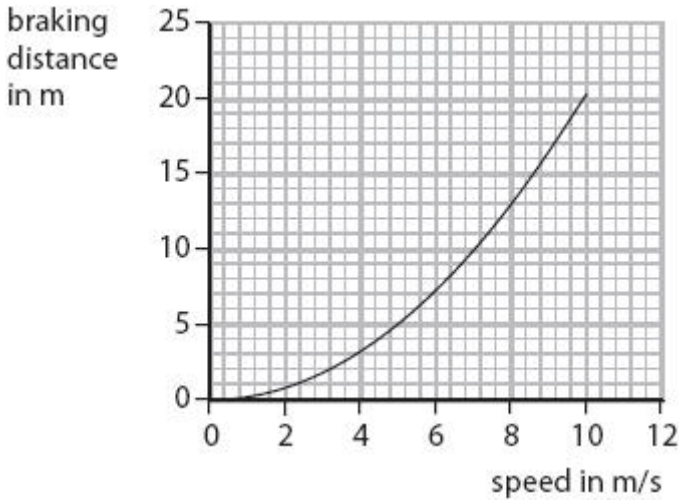

Figure 8

(i) When the bicycle is travelling at a speed of 15 m/s, the kinetic energy (KE) of a cyclist and the bicycle is 9300 J.

Calculate the mass of the cyclist and the bicycle.

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

(3)

mass = ... kg

(ii) Describe the energy transfer that takes place as this cyclist brakes.

(2)

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(Total for question = 5 marks)

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Q4.

Figure 18 shows a person on a skateboard at the top of a ramp.

At P, the person is not moving.

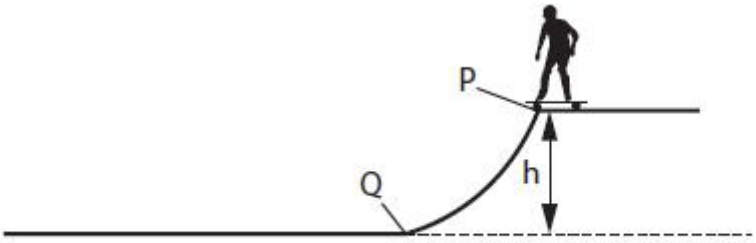

Figure 18

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)

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Q5.

Shot-put is an Olympic event.
The shot is a heavy ball.
An athlete throws the shot as far as possible.

A sports scientist analyses an athlete's throw to help improve performance.

In one throw, the shot continues to rise by another 1.3 m after it leaves the athlete's hand.
The mass of the shot is 7.26 kg.

(i) Calculate the amount of gravitational potential energy gained by the shot.

(2)

gravitational potential energy gained = ... J

(ii) Explain how the total energy stored in the shot changes between leaving the athlete's hand and hitting the ground.

(2)

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(Total for question = 4 marks)

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