Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Forces (Standard Demand Questions)

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

Alpha particles, beta particles and gamma rays are types of nuclear radiation.

(a) Describe the structure of an alpha particle.

_____

_____

(1)

(b) Nuclear radiation can change atoms into ions by the process of ionisation.

(i) Which type of nuclear radiation is the least ionising?

Tick (✔) **one** box.

alpha particles ☐

beta particles ☐

gamma rays ☐

(1)

(ii) What happens to the structure of an atom when the atom is ionised?

_____

_____

(1)

(c) People working with sources of nuclear radiation risk damaging their health.

State **one** precaution these people should take to reduce the risk to their health.

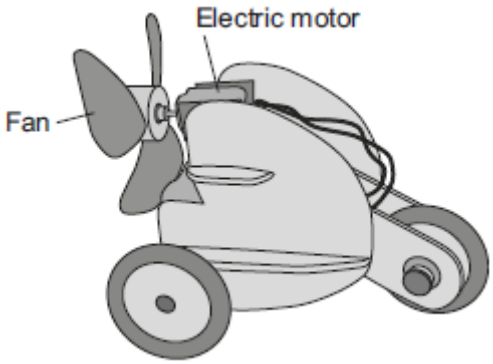
_____

_____

(1)
(Total 4 marks)

Q2.

The diagram shows an air-driven toy.
When the electric motor is switched on the fan rotates.
The fan pushes air backwards making the toy move forwards.



(a) (i) The toy has a mass of 0.15 kg and moves forward with a velocity of 0.08 m/s.

How is the momentum of the toy calculated?

Tick (✔) **one** box.

0.15 + 0.08 = 0.230 ☐

0.15 ÷ 0.08 = 1.875 ☐

0.15 × 0.08 = 0.012 ☐

(1)

(ii) What is the unit of momentum?

Tick (✔) **one** box.

kg m/s ☐ m/s^2 ☐ kg/m/s ☐

(1)

(iii) Use the correct answer from the box to complete the sentence.

less than	**equal to**	**more than**

The momentum of the air backwards is _____ the momentum of the toy forwards.

(1)

(b) The electric motor can rotate the fan at two different speeds.

Explain why the toy moves faster when the fan rotates at the higher of the two speeds.

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_____

_____

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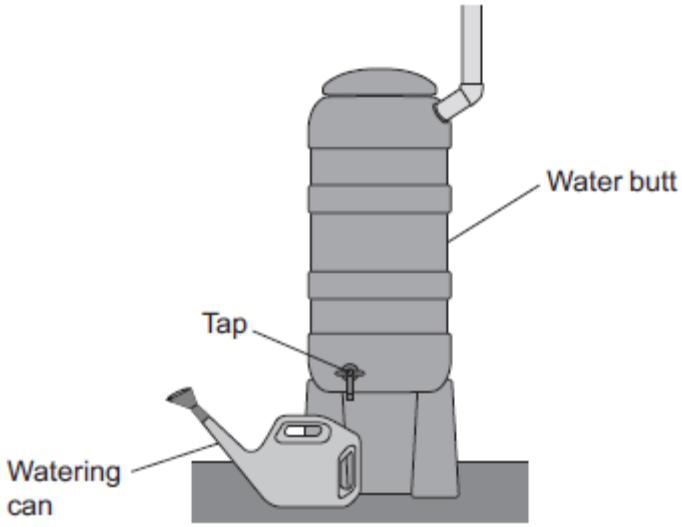
(2)

(Total 5 marks)

Q3.

The diagram shows a water butt used to collect rainwater.



A tap allows water to be collected from the water butt in a watering can.

(a) If the tap was placed higher up on the water butt, what difference would it make to the rate of flow of water from the tap?

Explain your answer.

_____

_____

_____

_____

(2)

(b) A hosepipe is now attached to the tap. The hosepipe takes water to where it is needed.

A gardener did an investigation to see how the rate of flow of water through a hosepipe, from a water butt, varies with the length of the hosepipe.

His results are shown in below table.

Length of hosepipe in metres	**Water collected in 10 seconds in cm^3**
2.0	500
3.0	500

4.0	500
5.0	500
10.0	250
15.0	170

(i) What conclusions can you make based on the results in the table above?

_____

_____

_____

_____

(2)

(ii) Suggest further readings that should be taken to improve the investigation.

Give reasons for your answers.

_____

_____

_____

_____

_____

_____

_____

_____

(4)

(c) **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**

You are provided with a water butt and lengths of hosepipe of different diameter.

Describe how you would investigate how the rate of flow of water through a hosepipe varies with the diameter of the hosepipe.

In your description you should include:

- any additional equipment that you would use
- any measurements you would make using the equipmentz
- any variables that need to be controlled and how this would be achieved.

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(6)
(Total 14 marks)