Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 10_Electricity

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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

The Big Bang theory is one theory for the origin of the Universe.

The Big Bang theory suggests:

- the Universe had a beginning
- the Universe is still expanding.

Observations of the expanding Universe have shown that the further away a galaxy is from the Earth, the faster the galaxy is moving away from the Earth.

Figure 4 shows how the velocity of galaxies is related to their distance from the Earth.

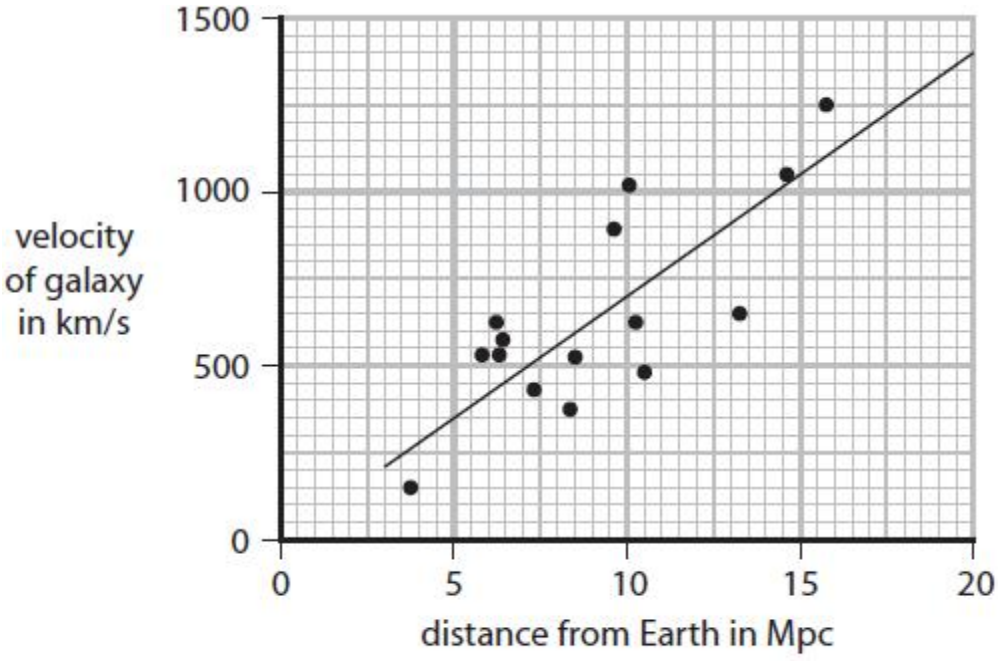

Figure 4

Mpc is a unit of distance used for large distances in space.

(i) Use Figure 4 to estimate the velocity of a galaxy that is 15 Mpc away from the Earth.

(1)

velocity = ... km/s

(ii) Calculate the gradient of the line shown in Figure 4.

State the unit.

(3)

gradient = ... unit .....

(iii) The gradient of the line in Figure 4 can be used to estimate the age of the Universe.

Explain why the gradient of the line in Figure 4 can only provide an **estimate** of the age of the Universe.

(2)

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(Total for question = 6 marks)

Q2.

Figure 1 shows some of the apparatus that students use to determine the resistance of a piece of iron wire.

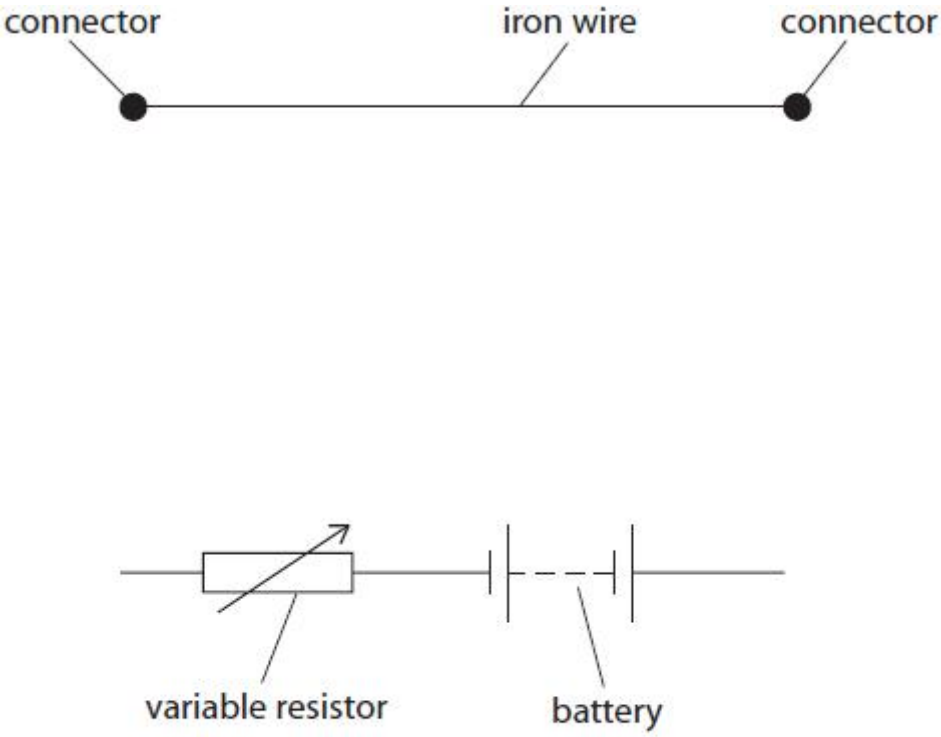

Figure 1

The students extend the investigation to determine how the resistance of the iron wire changes with its length.

(i) Give the name of **one** additional piece of apparatus the students would need.

(1)

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(ii) Figure 2 shows a graph of the results.

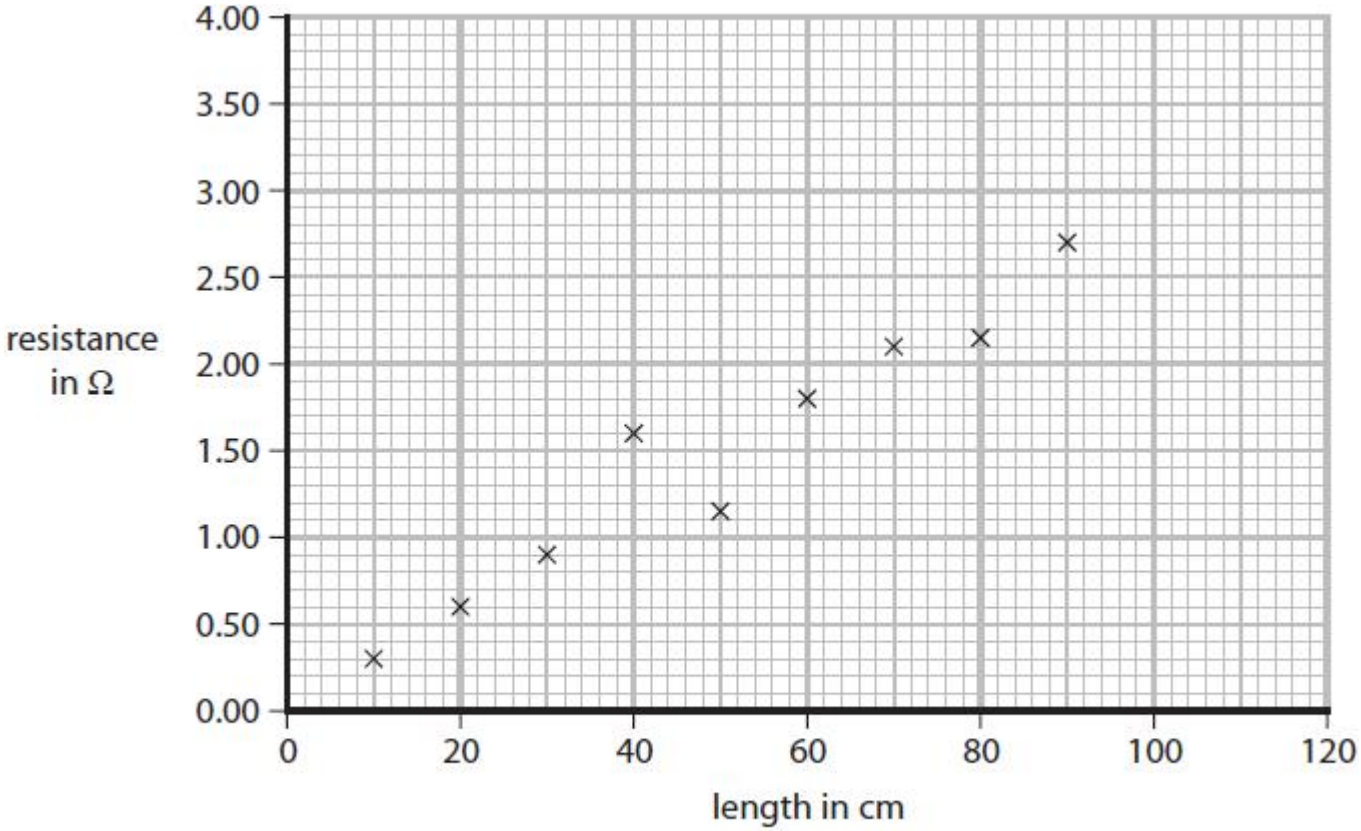

Figure 2

Draw a straight line of best fit on Figure 2.

(1)

(iii) Use Figure 2 to estimate the resistance of a 100 cm length of the iron wire.

(1)

resistance = ... Ω

(iv) The variable resistor shown in Figure 1 is used to prevent the iron wire from becoming too hot.

Explain how the variable resistor is used to prevent the iron wire from becoming too hot.

(2)

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(Total for question = 5 marks)

Q3.

The unit of work is the joule.

Starting with the meaning of work, we may obtain an equivalent unit of work as Nm.

Using work = $F \times d$

unit of work = unit of force × unit of distance = Nm

The unit of potential difference is the volt.

Explain how, starting with the meaning of potential difference, we may obtain an equivalent unit of potential difference.

(2)

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(Total for question = 2 marks)

Q4.

Figure 11 shows the three-pin plug used to connect the kettle to the mains.

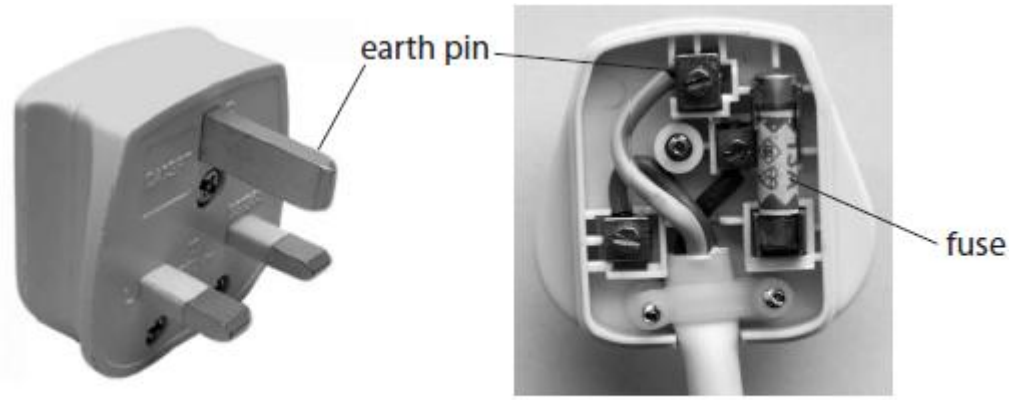

Figure 11

A fault occurs in the kettle causing the live wire to touch the metal case of the kettle.

Explain how the safety features of the plug operate when this fault occurs.

(6)

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(Total for question = 6 marks)