Electrical Quantities

Question Paper

Course	CIE IGCSE Physics
Section	4. Electricity & Magnetism
Topic	Electrical Quantities
Difficulty	Easy

Time Allowed 30

Score /22

Percentage /100

Question 1a

A student sets up an electrical circuit. She draws part of the circuit diagram, as shown in Fig.8.1.

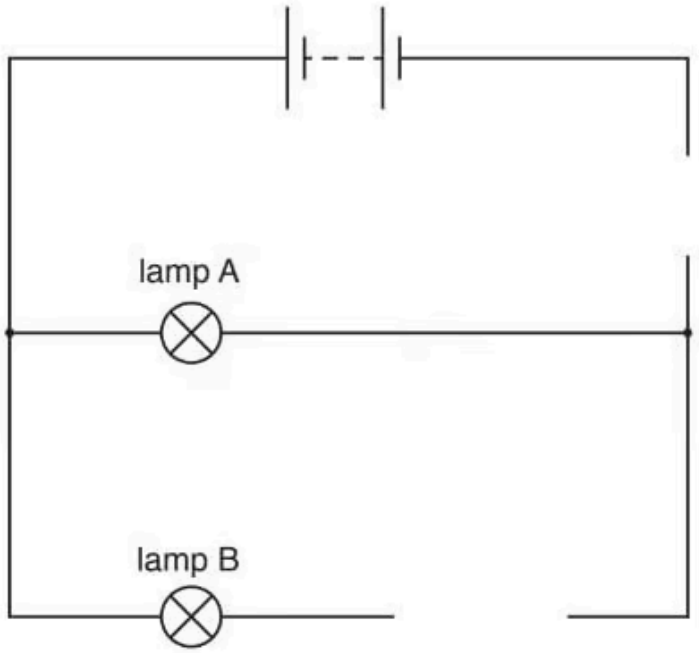


Fig. 8.1

On Fig.8.1, draw the circuit symbols for three devices so that the student can:

(i) measure the total current in the circuit

[1]

(ii) vary the current in the lamp B only

[1]

(iii) measure the potential difference (p.d.) across lamp B.

[2]

[4 marks]

Question 1b

The current in lamp A is 0.20 A. The potential difference (p.d.) across lamp A is 6.0 V.

Calculate the resistance of lamp A.

resistance = ...Ω

[3 marks]

Question 2a

Fig. 10.1 shows a balloon hanging from an insulating thread.

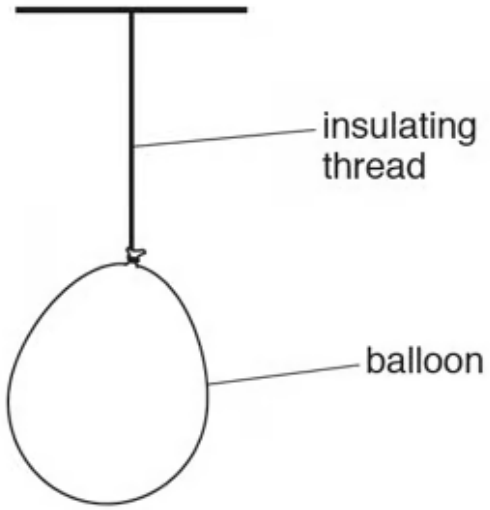


Fig. 10.1

(i) A student gives the balloon a positive charge.

Which statement explains why the balloon becomes positively charged? Tick one box.

- ☐ The balloon gains electrons
- ☐ The balloon loses electrons
- ☐ The balloon gains protons
- ☐ The balloon loses protons

[1]

(ii) The student brings a charged rod close to the balloon as shown in Fig. 10.2.

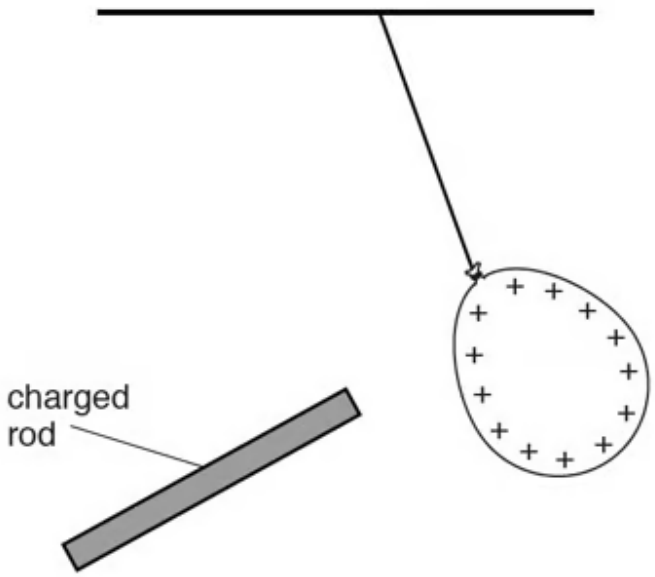


Fig. 10.2

State the type of charge on the rod.

Explain your answer.

[2]

[3 marks]

Question 2b

Electrical charges can move easily through some materials.

Draw a circle around each material that charges can move through easily.

copper plastic rubber silver wood

[1 mark]

Question 3a

A student rubs a plastic rod with a dry cloth, as shown in Fig. 8.1. The rod becomes negatively charged.

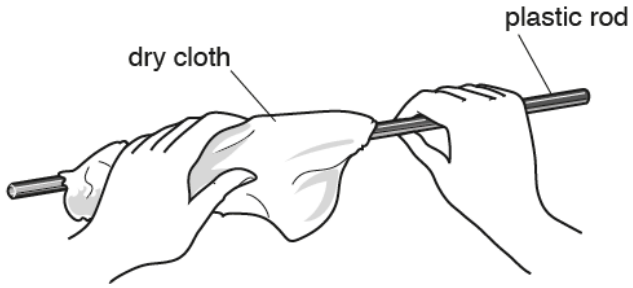


Fig. 8.1

(i) Use words from the box to complete the sentence.

air **cloth** **electrons** **hand** **neutrons** **protons**

The rod becomes negatively charged because ..... move from the ..... to the rod.

[2]

(ii) The student moves the rod close to a suspended, charged rod. The two rods repel each other.

State the type of charge on the suspended rod.

[1]

(iii) Explain your answer to (a)(ii).

[1]

[4 marks]

Question 3b

A device has a metal case. Any charge on the case must be able to move to earth.

(i) Draw one ring around a material that is suitable for the connection to earth.

copper **glass** **plastic** **rubber**

[1]

(ii) Explain your answer to (b)(i).

[1]

[2 marks]

Question 4a

Fig. 10.1 shows the apparatus for an experiment on electrostatics.

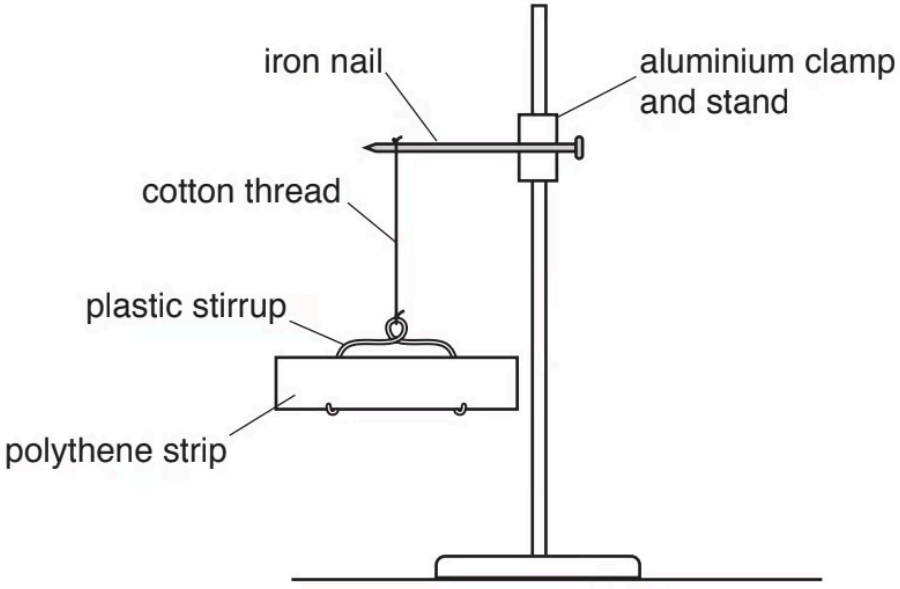
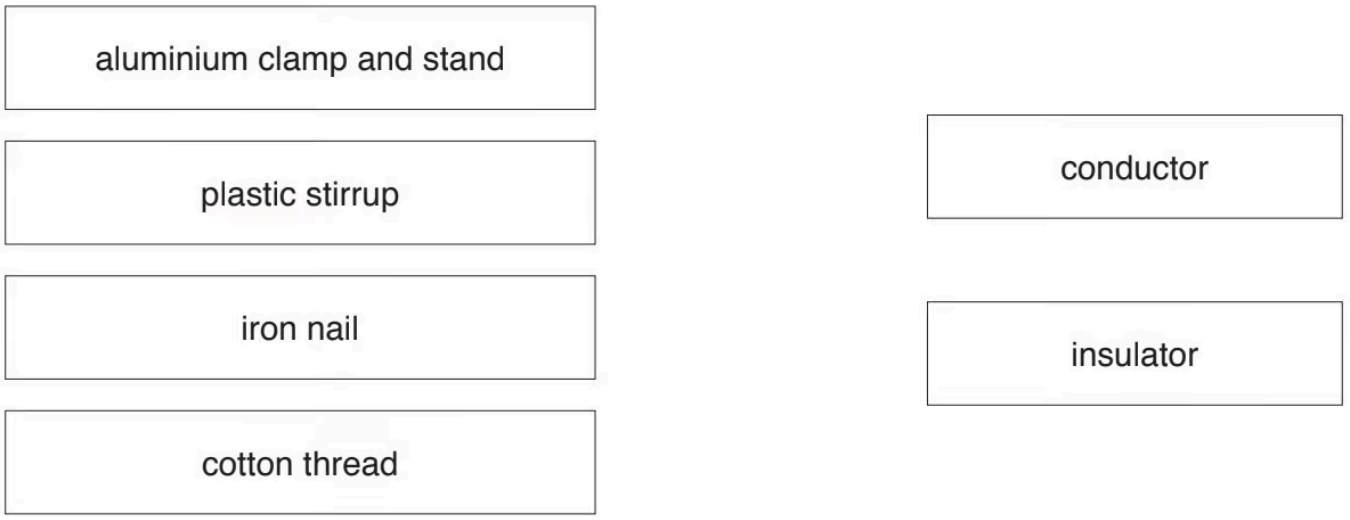


Fig. 10.1

Identify the pieces of equipment that are electrical conductors and those that are electrical insulators. Draw a line from each piece of equipment to the correct box.



[1 mark]

Question 4b

State and explain how the polythene strip can be given a negative charge.

[2 marks]

Question 4c

Describe how the apparatus in Fig.10.1 could be used to demonstrate that the polythene strip has a negative charge.

[2 marks]