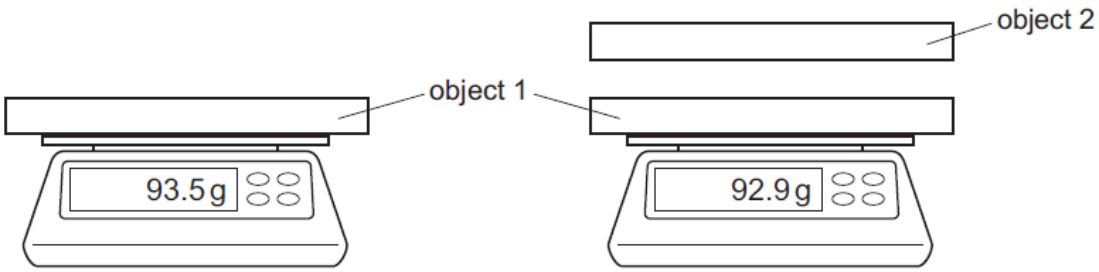
Electrostatics – 2023 IGCSE Physics 0625

1. Nov/2023/Paper_ 0625/11/No.25

Object 1 is given a negative charge and placed on a balance.

Object 2, which is also charged, is brought close to object 1 and the reading on the balance changes as shown.



Which action would further decrease the reading on the balance?

A Add the same number of electrons to both objects.

B Remove the same number of electrons from both objects.

C Transfer electrons from object 1 to object 2.

D Transfer electrons from object 2 to object 1.

2. Nov/2023/Paper_ 0625/11/No.28

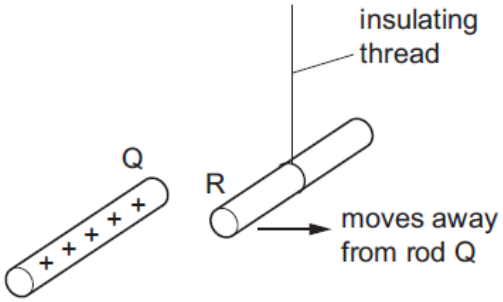
A plastic rod is rubbed with a cloth. The rod becomes positively charged because of the movement of charged particles.

Which row gives the name of these charged particles and the direction in which they move?

	charged particles	direction of movement
A	electrons	from cloth to rod
B	electrons	from rod to cloth
C	protons	from cloth to rod
D	protons	from rod to cloth

3. Nov/2023/Paper_ 0625/12,22/No.28

In the diagram, rod R is suspended from an insulating thread.



When the positively charged rod Q is brought close to rod R, rod R moves away from rod Q.

Which conclusion can be made from this observation?

A Rod R is charged, but it is not possible to identify the sign of the charge.

B Rod R must be positively charged.

C Rod R must be negatively charged.

D Rod R is uncharged.

4. Nov/2023/Paper_ 0625/13/No.25

A teacher wishes to show the production of electrostatic charges.

She holds a rod and rubs it with a cotton cloth. A copper rod, a glass rod, a plastic rod and a steel rod are available.

Which two rods would both be suitable to use?

A a copper rod and a glass rod

B a glass rod and a plastic rod

C a plastic rod and a copper rod

D a plastic rod and a steel rod

5. Nov/2023/Paper_ 0625/21/No.28

A plastic rod is rubbed with a cloth. The rod becomes positively charged because of the movement of charged particles.

Which row gives the name of these charged particles and the direction in which they move?

	charged particles	direction of movement
A	electrons	from cloth to rod
B	electrons	from rod to cloth
C	protons	from cloth to rod
D	protons	from rod to cloth

6. Nov/2023/Paper_ 0625/23/No.28

A teacher wishes to show the production of electrostatic charges.

She holds a rod and rubs it with a cotton cloth. A copper rod, a glass rod, a plastic rod and a steel rod are available.

Which two rods would both be suitable to use?

A a copper rod and a glass rod

B a glass rod and a plastic rod

C a plastic rod and a copper rod

D a plastic rod and a steel rod

(a) A plastic rod is uncharged.

When the rod is rubbed with a woollen cloth, the rod becomes negatively charged.

Explain, in terms of particles, why the rod becomes negatively charged.

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..... [2]

(b) Fig. 7.1 shows a negatively charged metal sphere S.

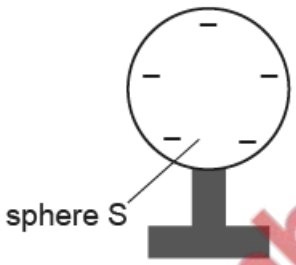

Fig. 7.1

There is an electric field surrounding S.

(i) State what is meant by an electric field.

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..... [1]

(ii) On Fig. 7.1, draw the pattern of the electric field surrounding sphere S and indicate its direction. [2]

(c) Fig. 7.2 shows a small negative charge Z placed near to sphere S.

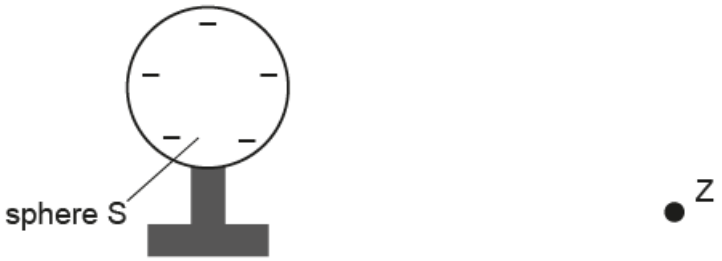

Fig. 7.2

Charge Z experiences a force due to the electric field surrounding S.

On Fig. 7.2, draw an arrow to show the direction of this force on Z. [1]

[Total: 6]

8. Nov/2023/Paper_ 0625/43/No.7

(a) Fig. 7.1 shows the electric field pattern around point X.

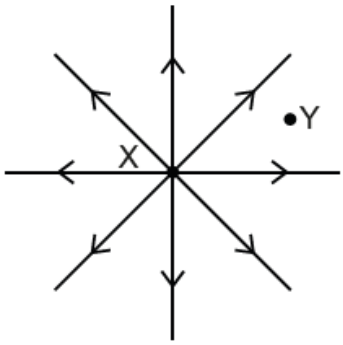

Fig. 7.1

(i) On Fig. 7.1, draw an arrow to indicate the direction of the force on a negative point charge placed at point Y. [2]

(ii) State what is at point X to produce the field pattern shown in Fig. 7.1.

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..... [2]

(b) A piece of plastic is charged positively by friction.

State what charge transfers occur during this process.

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..... [2]

(c) Explain how the structure of an electrical conductor differs from the structure of an electrical insulator.

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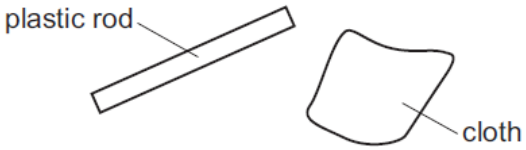
..... [2]

[Total: 8]

9. June/2023/Paper_0625/11,21/No.24

A plastic rod is rubbed with a cloth.

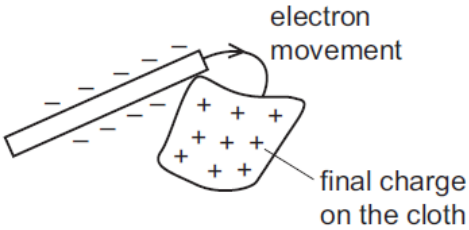


The rod and the cloth both become charged as electrons move between them.

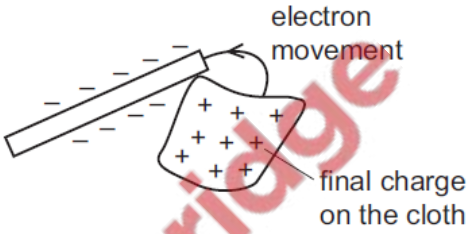
The rod becomes negatively charged.

Which diagram shows how the rod becomes negatively charged and shows the final charge on the cloth?

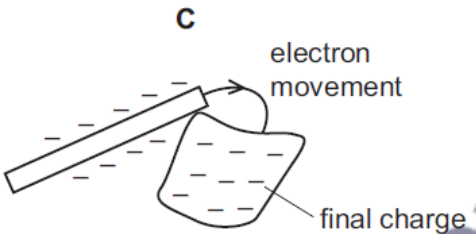
A



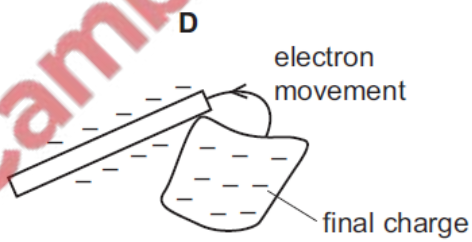
B



C



D



10. June/2023/Paper_0625/12/No.24

A plastic rod is rubbed with a dry cloth. The rod becomes positively charged.

Why has the rod become positively charged?

A It has gained electrons.

B It has gained neutrons.

C It has lost electrons.

D It has lost neutrons.

11. June/2023/Paper_0625/13/No.24

A plastic rod and a dry cloth are uncharged.

The rod is now rubbed with the cloth and they both become charged. The rod becomes negatively charged because some charged particles move from the cloth to the rod.

What is the charge on the cloth and which particles moved in the charging process?

	charge on cloth	particles that moved
A	negative	electrons
B	negative	neutrons
C	positive	electrons
D	positive	neutrons

12. June/2023/Paper_0625/22/No.24

A plastic rod is rubbed with a dry cloth. The rod becomes positively charged.

Why has the rod become positively charged?

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B It has gained neutrons.

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13. June/2023/Paper_0625/23/No.24

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	charge on cloth	particles that moved
A	negative	electrons
B	negative	neutrons
C	positive	electrons
D	positive	neutrons

14. June/2023/Paper_0625/42/No.8(b)

(b) Fig. 8.1 shows a negatively charged metal sphere.

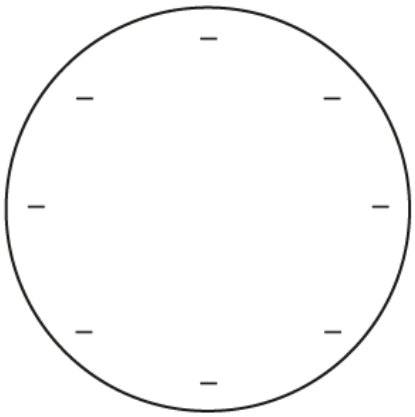

Fig. 8.1

On Fig. 8.1, draw **four** lines to show the electric field and its direction. [2]