

Static Electricity Past Paper Questions IGCSE Edexcel

1.

1 The passage is about static electricity.

Use words from the box to complete the passage.

Each word may be used once, more than once, or not at all.

(4)

atoms	attract	electrons	friction
negatively	positively	protons	repel

A student combs her hair with a plastic comb. Her hair and the comb become charged.

This happens because of the between her hair

and the comb. The comb becomes positively charged so her hair becomes

..... charged.

The student's hair sticks out because like charges

When the student moves the comb through her hair, she can hear a crackling sound.

This is caused by transferring from the comb to her hair.

2.

This question is about electric charge.

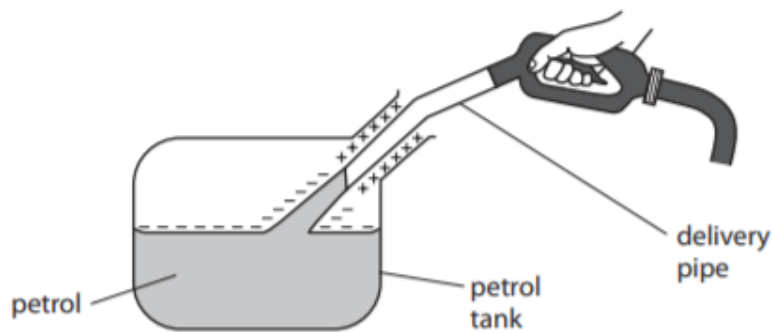
(a) When a balloon is rubbed with a cloth, the balloon becomes negatively charged.

Tick (✓) the two correct statements in the table.

(2)

Statement	Tick
negatively charged particles move from the cloth onto the balloon	
positively charged particles are rubbed off the balloon	
negatively charged particles on the balloon are protons	
the cloth becomes positively charged	

(b) When petrol passes through a delivery pipe, electrostatic charge can build up as shown in the diagram.



(i) Give a reason why a build-up of charge can be dangerous.

(1)

.....

.....

(ii) State how the build-up of electrostatic charge can be prevented.

(1)

.....

3.

A girl slides from point A to point B on a plastic slide.



(a) State the main type of energy lost as the girl travels from A to B.

(1)

(b) As the girl slides down, she becomes charged and her hair stands on end.



© Chris Darling (Wikipedia)

(i) The passage explains how the girl becomes charged.

Use words from the box to complete the passage.

Each word may be used once, more than once, or not at all.

(3)

conduction	electrons	friction	negative	positive	protons
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The girl becomes charged because of between the slide and her clothes.

As the girl travels down the slide, the slide loses

When the girl reaches point B, the slide has a charge.

(ii) Explain why the girl's hair stands on end.

(2)

.....

.....

.....

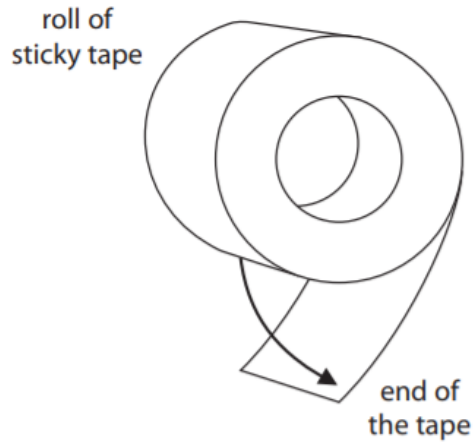
(c) The girl grabs hold of a metal post and her hair falls back down.

Explain why her hair falls back down.

(3)

4.

A student holds a roll of sticky tape and pulls the end down as shown in the diagram.

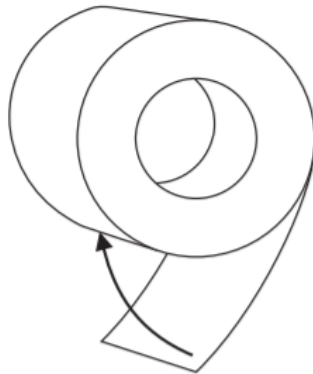


This causes both the roll and the end of the tape to become electrically charged by friction.

(a) Explain how an object becomes charged by friction.

(3)

- (b) The student lets go of the end of the tape and the charges cause it to move towards the roll.



Explain why the end of the tape moves back towards the roll.

(2)

5.

The photograph shows a fuel delivery at a petrol station.



Source: Jeeferon Siegel, New York Daily News

(a) Explain how a fuel tanker can become electrically charged while it is moving.

(2)

(b) Pumping fuel from an electrically-charged tanker can be dangerous.

(i) Describe a possible danger of pumping fuel from an electrically-charged tanker.

(1)

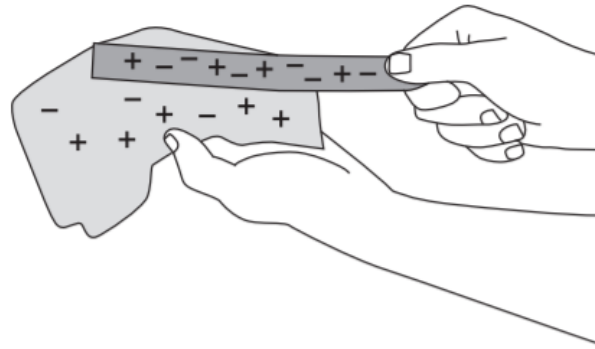
(ii) The driver connects an earth wire to the fuel tanker before pumping fuel.

Explain how connecting the earth wire reduces the possible dangers.

(2)

6.

When a plastic rod is rubbed with a cloth, the rod gains charge.



(a) How could you show that the plastic rod gains charge?

(1)

(b) Explain how the plastic rod gains charge when it is rubbed.

(2)

(c) There are two types of charge.

Describe how you could demonstrate this using different insulating rods and a cloth.

In your answer, you should name any other equipment you would use.

(3)

7.

i The photograph shows an investigation of static electricity.

A teacher rubs a balloon with a cloth so that the balloon gains a positive charge.

She then holds the balloon close to her head, and her hair rises.



(a) Explain, in terms of moving charges, how the balloon becomes positively charged.

(2)

(b) Explain why the teacher's hair rises.

(2)

(c) Suggest why the charge remains on the balloon even when it is being held.

(1)

(d) Suggest why the experiment does not work so well when the air is humid (damp).

(1)

8.

This question is about static electricity.

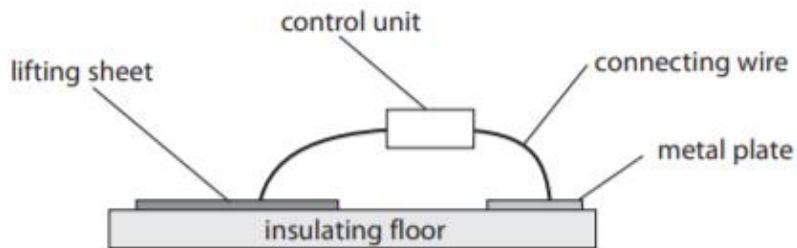
(a) Which of these materials is an electrical conductor?

(1)

- A paper
- B plastic
- C silver
- D wood

(b) A forensic scientist uses an electrostatic dust print lifter (EDPL) to take impressions of footprints.

The diagram shows a simplified EDPL and a description of how it works.



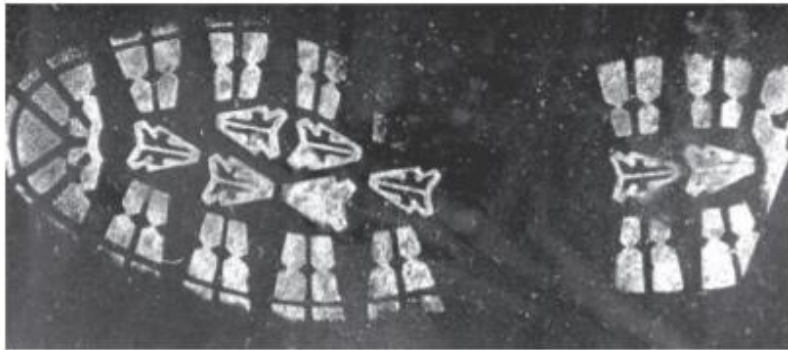
This is how it works

A lifting sheet is placed over the footprint.
 The metal plate is placed near it.
 The control unit applies a voltage of 10 kV between the lifting sheet and the metal plate.
 The lifting sheet becomes negatively charged and the metal plate becomes positively charged.
 A dust print forms on the lower surface of the lifting sheet.

Use the idea of charge movement to explain how the lifting sheet becomes negatively charged and the metal plate becomes positively charged.

(2)

(c) The photograph shows a typical dust print on a lifting sheet.



Suggest why dust particles are lifted off the floor on to the lifting sheet.

(2)

(d) This photograph shows a charged polythene rod placed next to a stream of water flowing from a tap.



Suggest why the water is deflected.

(2)

9.

This question is about electrostatic charges.

(a) Complete the sentences using words from the box.

Each word may be used once, more than once or not at all.

(2)

electrons negative neutral neutrons positive protons

When a plastic rod is rubbed with a cloth, the plastic rod gains

After the plastic rod has been rubbed with the cloth, the plastic rod has a
..... charge.

(b) Electrostatic charges can be useful during paint spraying.



(i) The droplets of paint are given the same charge as they leave the sprayer.

Explain why this is an advantage.

(2)

(ii) The droplets of paint are positively charged.

The object being painted is given a negative charge.

Explain why this is an advantage.

(2)

(c) Give **one** hazard caused by electrostatic charges and state how the risk from this hazard can be reduced.

(2)
