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IGCSE PHYSICS 0625 · TOPICAL PAST PAPERS

Electric Charge

Paper 1 — Multiple-Choice Questions (topical compilation)

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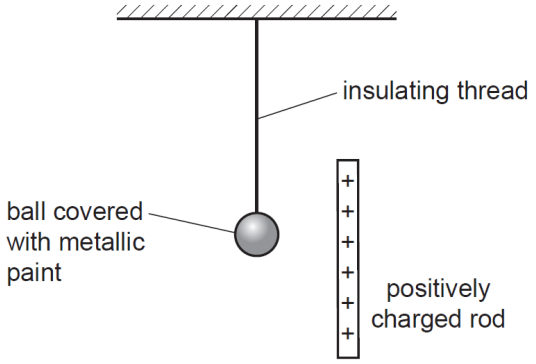
Static Electricity
PAPER 1 QUESTIONS

Laws and Principles of electrostatics

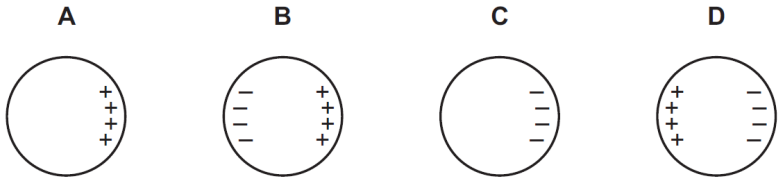
Applications of electrostatics

QUESTION # 1: M/J 16 P11

28 The diagram shows an uncharged ball coated with metallic paint. The ball is suspended from an insulating thread. It is placed near a positively charged rod.



Which diagram shows the charge distribution on the ball?



QUESTION # 2: M/J 16 P12

24 A polythene rod is rubbed with a cloth and the cloth becomes positively charged.

Which statement describes the transfer of charge?

A Negative charges are transferred from the cloth to the polythene.

B Negative charges are transferred from the polythene to the cloth.

C Positive charges are transferred from the cloth to the polythene.

D Positive charges are transferred from the polythene to the cloth.

QUESTION # 3: M/J 17 P11

32 A charged plastic ball is at rest.

Which fields are found in the region surrounding the ball?
(Ignore the magnetic field of the Earth.)

A electric, gravitational and magnetic

B electric and gravitational only

C electric and magnetic only

D gravitational and magnetic only

QUESTION # 4: M/J 17 P11

35 A shoe becomes positively charged by friction when it rubs against a carpet.

What happens as the shoe becomes charged?

A Negative electrons are transferred to the carpet.

B Negative electrons are transferred to the shoe.

C Positive electrons are transferred to the carpet.

D Positive electrons are transferred to the shoe.

QUESTION # 5: M/J 17 P11

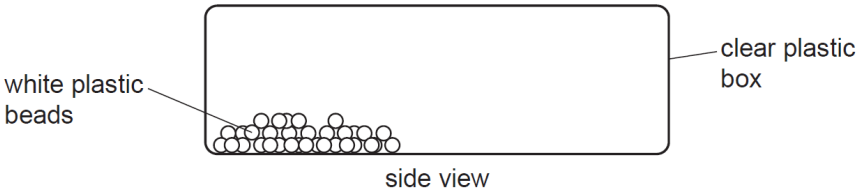
36 During a thunderstorm, a lightning flash occurs when charge flows between a cloud and the Earth. On average, 20 C of charge flows during each flash and there are three flashes every minute.

What is the average current between the cloud and the Earth during the thunderstorm?

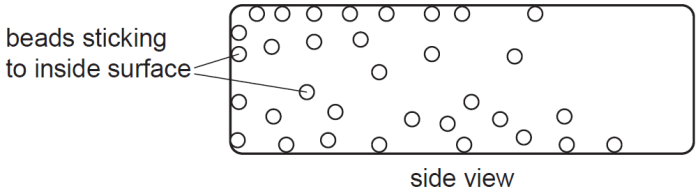
A 1.0 A **B** 36 A **C** 60 A **D** 1800 A

QUESTION # 6: M/J 19 P11

31 The diagram shows some white plastic beads in a clear plastic box.



The box is shaken and the beads rub against the box. The beads stick to the inside surface of the box.



Which row is a possible explanation for this?

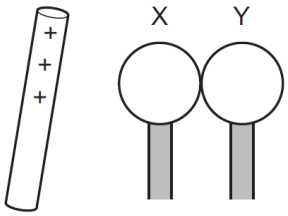
	box	beads
A	gains electrons	no change of electrons
B	loses electrons	gain electrons
C	no change of electrons	lose electrons
D	no change of electrons	gain electrons

QUESTION # 7: M/J 20 P11

34 Two insulated and uncharged metal spheres X and Y are touching.

A positively charged rod is held near X and then the spheres are moved apart.

X now has a negative charge.



What is the charge on Y?

A negative and smaller than that on X

B negative and the same size as that on X

C positive and smaller than that on X

D positive and the same size as that on X

QUESTION # 8: M/J 20 P11

35 A stationary negative charge in an electric field experiences an electric force in the direction shown.

What is the direction of the electric field?

A to the left

B to the right

C down the page

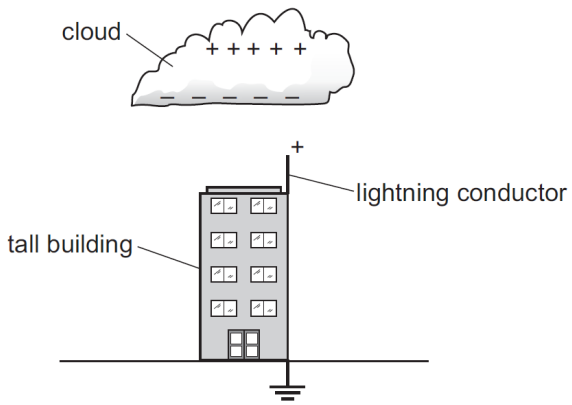
D up the page

QUESTION # 9: M/J 20 P12

34 A metal lightning conductor is placed on the top of a tall building.

The conductor is connected to Earth.

When a charged cloud passes over the building, the metal lightning conductor becomes positively charged.



What happens to the lightning conductor to produce a positive charge at its top?

A Electrons move downwards and protons move upwards in the conductor.

B Only electrons move in the conductor.

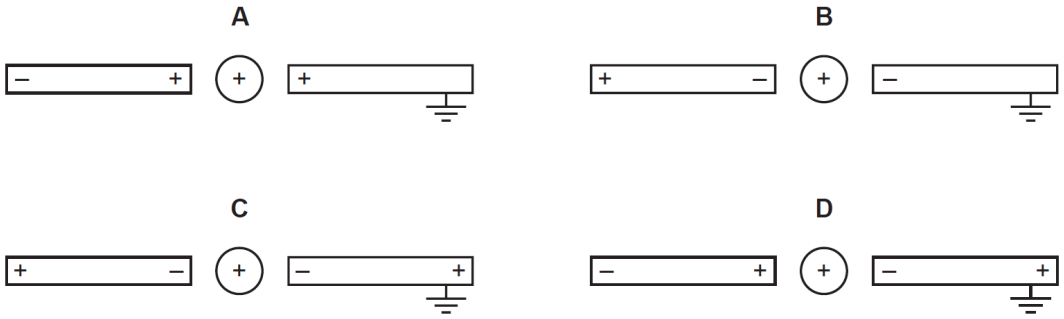
C Only protons move in the conductor.

D Protons in the air attach themselves to the conductor.

QUESTION # 10: O/N 16 P11

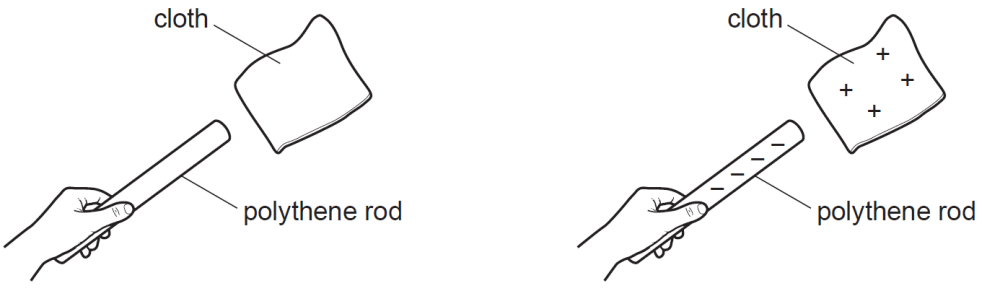
31 A positively charged metal sphere is placed midway between two previously uncharged metal rods, one of which is connected to earth.

Which diagram shows the charges on the rods?



QUESTION # 11: O/N 17 P11

28 A polythene rod is charged by rubbing it with a cloth.



before charging

after charging

Which statement explains why the cloth is charged?

A Electrons move from the cloth to the rod.

B Electrons move from the rod to the cloth.

C Protons move from the cloth to the rod.

D Protons move from the rod to the cloth.

QUESTION # 12: O/N 17 P12

27 A plastic block is rubbed with a silk handkerchief and the block becomes charged.

What causes the block to become charged?

A Negative electrons flow from the handkerchief and positive electrons flow from the block.

B Negative electrons flow from the handkerchief to the block.

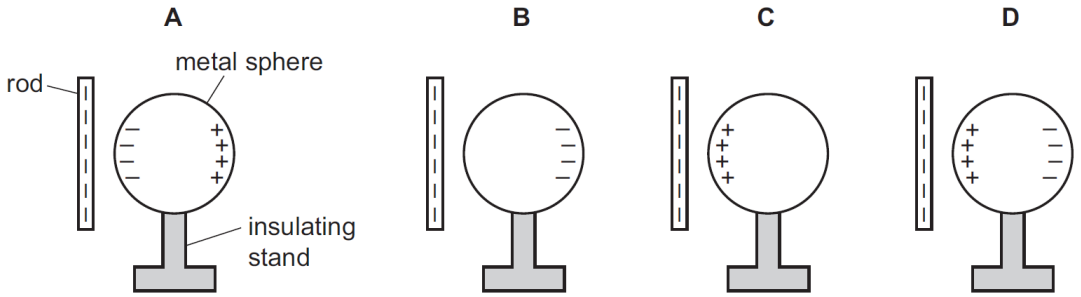
C Positive electrons flow from the block to the handkerchief.

D Positive electrons flow to the handkerchief and negative electrons flow to the block.

QUESTION # 13: O/N 17 P12

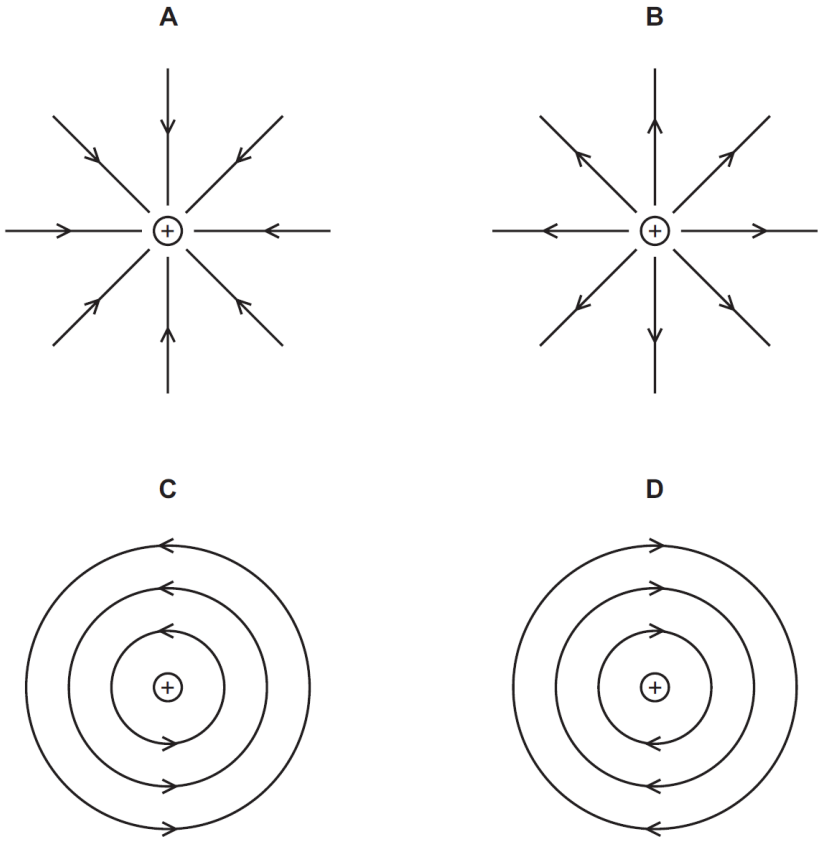
28 A negatively-charged rod is brought near to an uncharged metal sphere on an insulating stand.

Which diagram shows the charge distribution on the sphere?



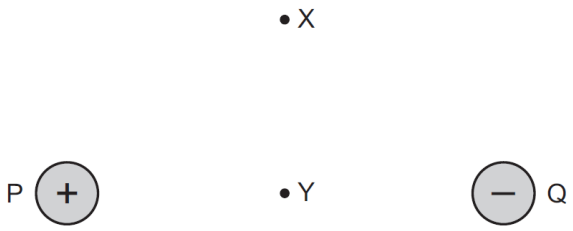
QUESTION # 14: O/N 18 P11

24 Which diagram shows the electric field around an isolated point positive charge?



QUESTION # 15: O/N 18 P11

25 An electric field is formed by two isolated, equal and opposite charges P and Q.



How does the field at X compare with the field at Y?

A It is stronger at X than at Y and is in the opposite direction.

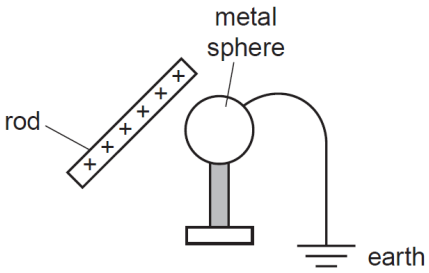
B It is stronger at X than at Y and is in the same direction.

C It is weaker at X than at Y and is in the opposite direction.

D It is weaker at X than at Y and is in the same direction.

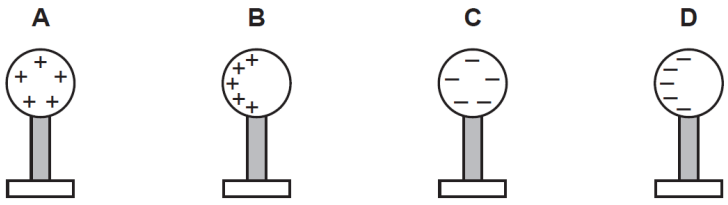
QUESTION # 16: O/N 18 P11

26 A positively charged rod is held close to an insulated metal sphere. The sphere is earthed as shown.



The earth connection is removed and then the rod is removed.

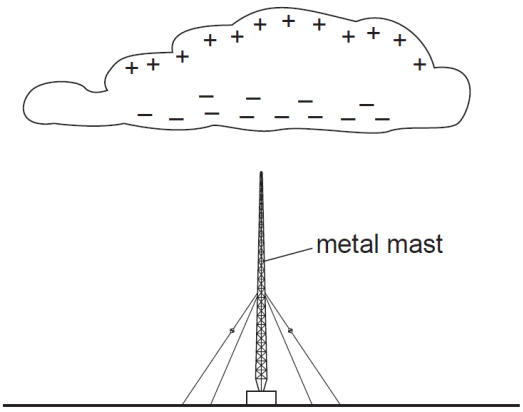
Which diagram shows the charges on the sphere after the rod is removed?



QUESTION # 17: O/N 19 P11

31 The base of a cloud is negatively charged.

The cloud is over a metal mast as shown.



Which row describes the charge induced at the top of the mast and how it is produced?

	charge at the top of the mast	charge at the top of mast is produced by
A	negative	electrons moving to the top of the mast
B	negative	protons moving to the bottom of the mast
C	positive	electrons moving to the bottom of the mast
D	positive	protons moving to the top of the mast

QUESTION # 18: O/N 19 P11

32 An aircraft flying through the air becomes electrically charged.

What causes this to happen?

A background radiation in the aircraft

B friction of the aircraft with the air

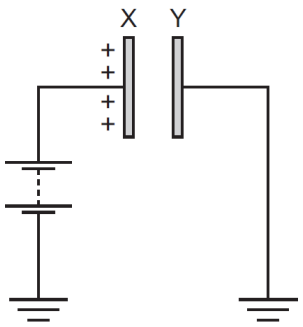
C heating of the aircraft surface

D radio waves emitted by the aircraft

QUESTION # 19: O/N 19 P12

30 A metal plate X is attached to earth by a battery. The plate has a positive charge.

A second metal plate Y is initially uncharged and connected to earth. This plate is positioned parallel to X.



What happens as Y is brought closer to X?

A Electrons flow from Y to earth only.

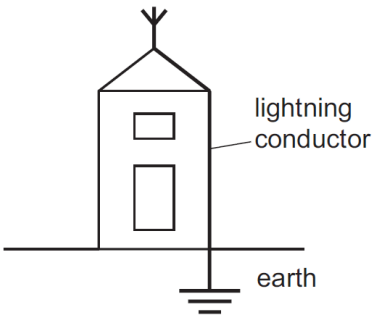
B Electrons flow to Y from earth only.

C Protons flow from Y to earth and electrons flow to Y from earth.

D Protons flow to Y from earth and electrons flow from Y to earth.

QUESTION # 20: O/N 19 P12

31 The diagram shows a metal lightning conductor attached to a building.



Why is the lightning conductor made of copper?

A Both positive and negative charges can flow through copper.

B Copper can be electrostatically charged.

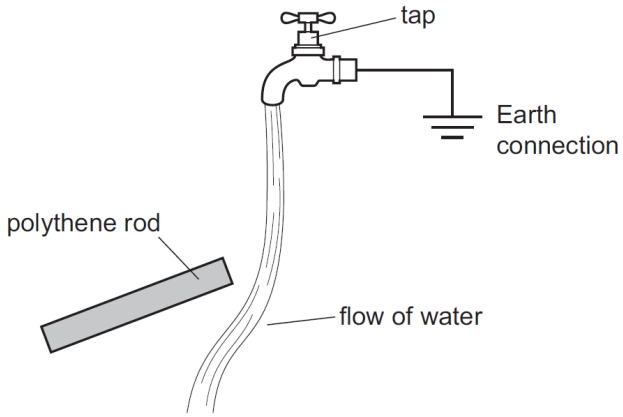
C So the lightning conductor has a low electrical resistance.

D So the heat is conducted away quickly.

QUESTION # 21: O/N 20 P11

33 A polythene rod is brought near to a stream of water from a metal tap which is earthed. Tap water is an electrical conductor.

The water moves towards the rod, as shown.



Which description of the rod and water is correct?

	rod	water
A	charged	charged
B	charged	uncharged
C	uncharged	charged
D	uncharged	uncharged

QUESTION 22: O/N 20 P11

34 A small negative charge is placed at a point where an electric field is vertically upwards.

There is a force on the charge due to the field.

In which direction does it act?

A vertically upwards

B vertically downwards

C horizontally to the right

D horizontally to the left