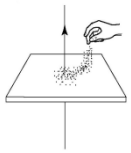
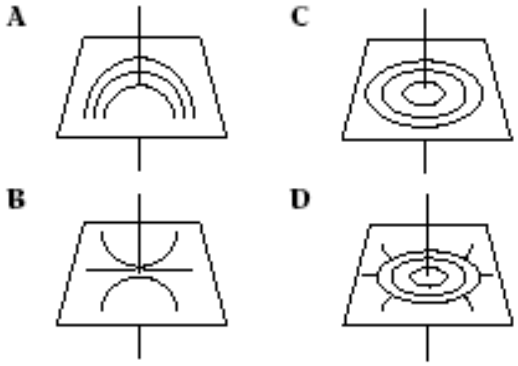
Chapter 24 Electricity

Paper 1
Answer **all** *questions. Each question is followed by four options,* **A**, **B**, **C** *and* **D**. *For each question, choose* **one** *answer only.*

1.



A student scatters iron filings on a white piece of cardboard as shown in the figure above. Which of the following patterns will be seen on the cardboard when the switch is turned on?

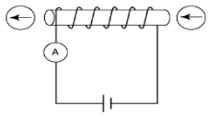


2. The function of a compass is based on the

I principle that a magnet hung freely will always point to a north-south direction
II existence of the Earth's magnetic field
III magnetic principle in which the north pole attracts the south pole

A	I and II only	**C**	II and III only
B	I and III only	**D**	I, II and III

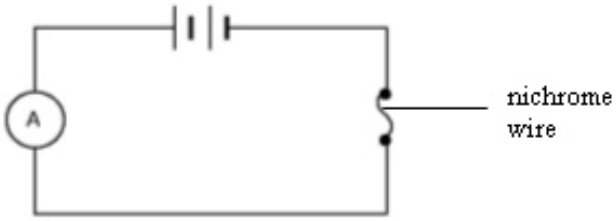
3.



The figure above shows an electromagnet with a compass at each end. What will happen if the connection of the battery terminal is reversed?

A The battery voltage will fall
B The direction of the compass needle will be reversed
C The electromagnetic attractive force will be increased
D The deflection of the ammeter needle will be increased

4.



The reading of the ammeter in the figure above can become greater if the nichrome wire used

I is longer
II is thicker
III is replaced by a copper wire

A I and II only
B I and III only
C II and III only
D I, II and III

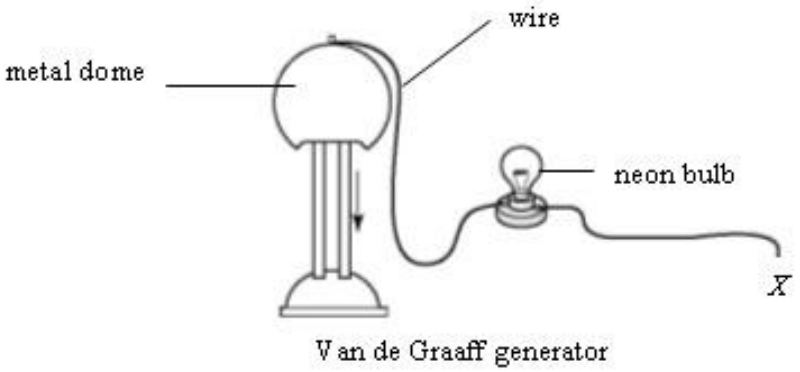
5. Which of the following statements is **correct**?

A An atom is positively charged when the number of its electrons is more than that of its protons.
B An atom is positively charged when it receives protons from another atom.
C The loss or gain of electrons can only occur in plastic materials
D Friction between two neutral substances will cause both the substances to be charged.

6. Which of the following **cannot** be charged by friction?

A Iron
B Plastic
C Glass
D Polythene

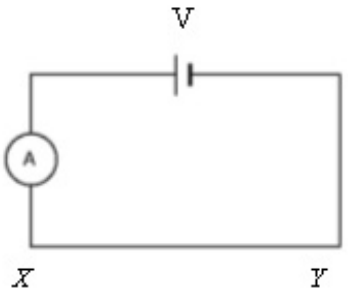
7.



In the experiment shown in the figure above, the electric current is produced when the charges flow through the wire. Which of the following need to be connected to the end of wire *X* so that the neon bulb will light up?

A Dry cell
B Water tap
C Carbon rod
D Electric source

8.

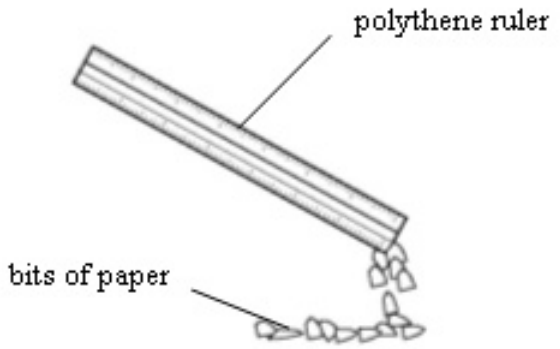


The figure above shows a wire *XY* connected to a dry cell and an ammeter. Which of the following can lower the ammeter reading?

A Using a thicker wire *XY*
B Using a shorter wire *XY*
C Increasing the number of dry cells

D Using a thinner and longer wire *XY*

9.

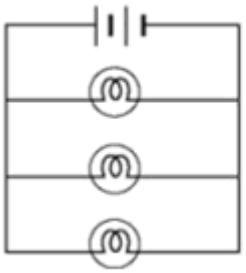


A polythene ruler rubbed with a piece of woollen cloth is placed closer to the bits of paper as shown in the figure above. Which of the following is **true** about this experiment?

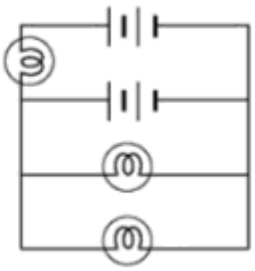
A The ruler is attracted to the bits of paper.
B Electrostatic force that is produced attracts the bits of paper.
C The charges on the ruler flow to Earth through the bits of paper.
D The charges on the ruler do not flow because it is a poor conductor.

10. In which of the following circuits will all three bulbs light up with the same brightness?

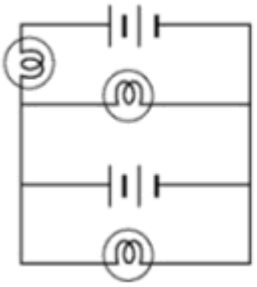
A



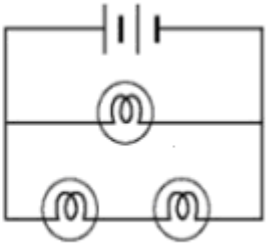
C



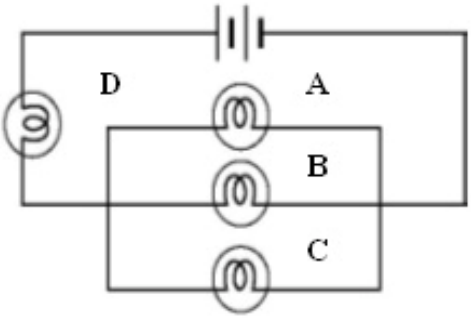
B



D

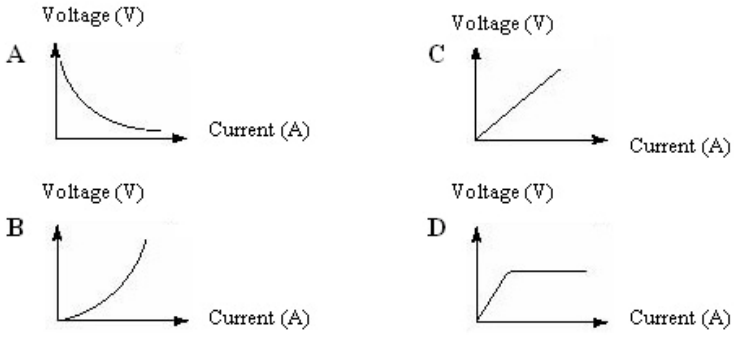


11.



The figure above shows four similar bulbs in a circuit. Which of the following bulbs **A**, **B**, **C** or **D** if removed will cause all the other bulbs to go off?

12. Which of the following represents the right voltage versus current graph according to Ohm's Law?



13.

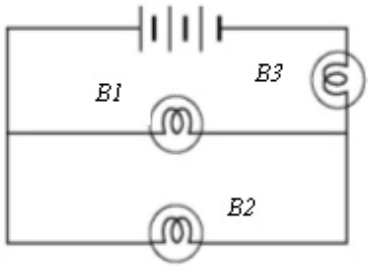


Figure 9

Which of the following statements is **true** about the electric circuit in the figure above?

A All the bulbs light up at different times.

B Damage to bulb *B1* does not affect bulbs *B3* and *B2.*

C Damage to bulb *B3* does not affect bulbs *B1* and *B2.*

D Bulbs *B1*, *B2* and *B3* light up with the same brightness

14. Which of the statements is **true** about electric charges?

I Only negative charges can move

II Like charges will repel one another

III A material will be negatively charged if it loses its electrons.

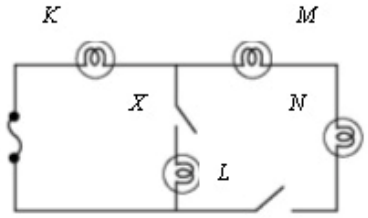
A I and II only

B I and III only

C II and III only

D I, II and III

15.



Which of the following bulbs *K, L, M* and *N* in the figure above will light up when switch *X* is turned on?

A *K* and *L* only

B *M* and *N* only

C *K, M* and *N* only

D *K, L, M* and *N*

16. The following are symbols of electrical instruments and the uses of the instruments. Which of the following is **correctly** paired?

Symbol *Use*

A  Detecting current

B  Complete and break a circuit

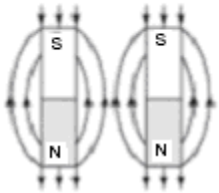
C  Safety device in a circuit

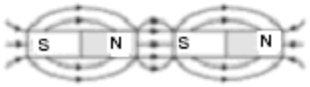
D  Measuring voltage

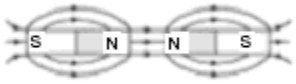
17. Dry hair stands erect when combed on a dry day because

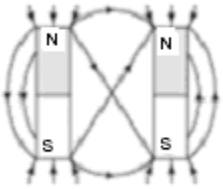
A the comb carries electric current
B the hair is charged as a result of friction with the comb
C electric charges flow from the comb to the hair and then to the Earth
D the hair prevents the charges from the comb from reaching the head

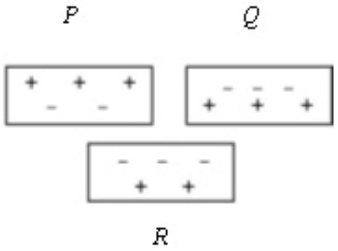
18. The diagrams below show patterns of magnetic field. Which of following is **correct**?

A 

C 

B 

D 

19. 

The figure above shows charges on three objects. Which of the following represents

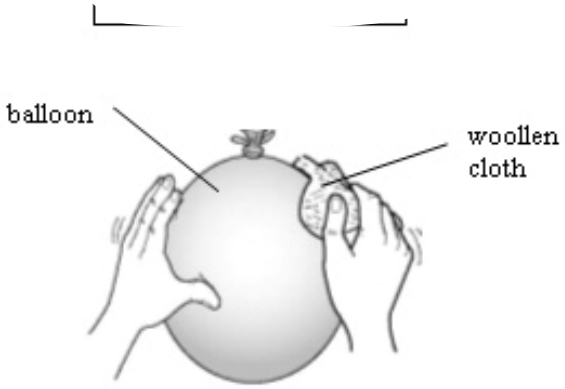
the charge conditions of objects *P*, *Q* and *R*?

	P	*Q*	*R*
A	Negative	Positive	Neutral
B	Neutral	Negative	Positive
C	Neutral	Positive	Negative
D	Positive	Neutral	Negative

20. An electroscope becomes positively charged if its metal disc

A is connected to an electric source
B is rubbed with a woollen cloth
C is touched with a negatively charged object
D is touched with a positively charged object

Paper 2
Answer the question.



A balloon is rubbed with a piece of woollen cloth for a while as shown in the figure above.

(a) (i) What will happen when the balloon is brought near little bits of paper?

_____

(ii) Give an inference for your answer in (a)(i).

_____

(b) If the woollen cloth is charged positively after rubbing with the balloon, what is

the charge produced on the balloon?

_____

(c) (i) A different balloon which is also rubbed with a woollen cloth is placed near the first balloon. What can be observed?

_____

(ii) Explain your answer.

_____

(d) (i) Name **one** instrument which can be used to detect the change to the balloon after it has been rubbed with woollen cloth.

_____

(ii) Explain how the instrument mentioned in (d)(i) is used.

_____

Answers:

Paper 1

1	**C**	11	**D**
2	**A**	12	**C**
3	**B**	13	**B**
4	**C**	14	**A**
5	**D**	15	**A**
6	**A**	16	**A**
7	**B**	17	**B**
8	**D**	18	**A**
9	**B**	19	**D**
10	**A**	20	**D**

Paper 2

(a) (i) Bits of paper are attracted to the balloon.

(ii) The balloon is charged through friction. The charged balloon attracts the bits of paper which are not charged.

(b) Negative charge

(c) (i) The two balloons repel each other.

(ii) Like charges repel one another.

(d) (i) Electroscope

(ii) The gold foil of the electroscope diverges when a charged balloon is placed near its metal disc