

Name: _____ Date: _____

Chapter Test 1 Static Electricity

MULTIPLE CHOICE. Write the letter of the correct answer on the space provided.

____ 1. A leaf electroscope is neutral. As a negative charge is brought close to the electroscope, the leaves spread apart because the approaching negative charge _____.

- A. Attracts and pulls electrons away from them.
- B. Attracts and pulls protons away from them.
- C. Pushes electrons down onto them.
- D. Pushes protons down onto them.

____ 2. An electro statically charged object will pick up small pieces of paper. Which of the following will not pick up pieces of paper?

- A. An earthed metal rod rubbed with a duster
- B. A plastic comb pulled through dry hair
- C. A polythene rod rubbed with a woollen cloth
- D. a rubber balloon rubbed on a nylon shirt

____ 3. A negatively charged rod is brought near a charged electroscope. As a result of doing this, the electroscope leaves move further apart. What is the charge on the electroscope? A. Positive B. Negative C. It is neutral

D. it depends on the distance between the electroscope and the rod.

____ 4. A negatively charged rod is brought near an uncharged, grounded electroscope. Which of the following statements is true?

- A. The positive charge flows from the electroscope to the ground.
- B. The positive charge flows from the ground to the electroscope.
- C. The negative charge flows from the electroscope to the ground.
- D. The negative charge flows from the ground to the electroscope.

____ 5. Two insulated and uncharged metal spheres X and Y are touching. While the positively charged rod is near X, the spheres are moved apart. After this action, X has a negative charge. What will be charged 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.

_____ 6. A neutral electroscope is touched with a negatively charged rod. What is the charge on the electroscope after the rod is removed?
A. Positive B. Negative C. It stays neutral
D. It depends on the contact time

_____ 7. An electro-statically charged object will pick up small pieces of paper. Which of the following will not pick up small pieces of paper?
A. An earth metal rod rubbed with a duster.
B. A polythene rod rubbed with a woollen cloth.
C. A plastic comb pulled through dry hair.
D. A rubber balloon rubbed on a nylon shirt.

_____ 8. An object becomes positively charged when it is rubbed by a soft cloth. How will this happen?
A. It has gain electrons C. It has gain protons
B. It has lost electrons D. It has lost protons

_____ 9. A neutral electroscope is touched with a positively charged rod.
After the rod is removed the electroscope is charged positively because of:
A. Induction B. Conduction C. Earthing

_____ 10. A plastic rod is rubbed with a piece of animal fur. The plastic acquires a negative charge during this process. Which of the following is true about the charge on the piece of fur?
A. It acquires a positive charge but greater in magnitude than the rod.
B. It acquires a negative charge but greater in magnitude than the rod.
C. It acquires a negative charge but less in magnitude than the rod.
D. It acquires a positive charge with the same magnitude as the rod.

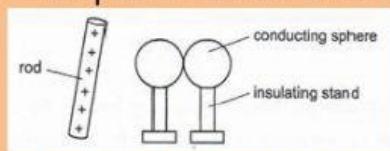
_____ 11. A positively charged rod is brought close to one end of a neutral metallic plate. What type of charge is induced on the closest side of the plate?
A. Positive B. Negative C. Neutral
D. It depends of the separation between the rod and plate.

_____ 12. A positively charged rod is brought close to one end of a neutral metallic plate. What type of charge is induced on the farthest side of the plate?
A. Positive B. Negative C. Neutral
D. It depends of the separation between the rod and plate.

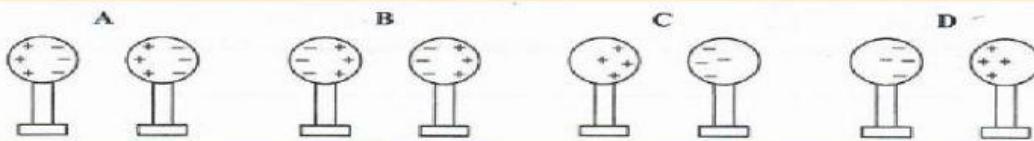
_____ 13. A duster that has lost electrons is said to be..
A. positively charged B. uncharged C. negatively charged

_____ 14. A plastic rod is said to be positively charged. What has happened?
A. It has gained electrons. C. It has lost electrons.
B. It has gained protons. D. It has lost protons.

15. The diagram shows a positively charged rod close to two conducting spheres mounted on insulating stands. The spheres are in contact.

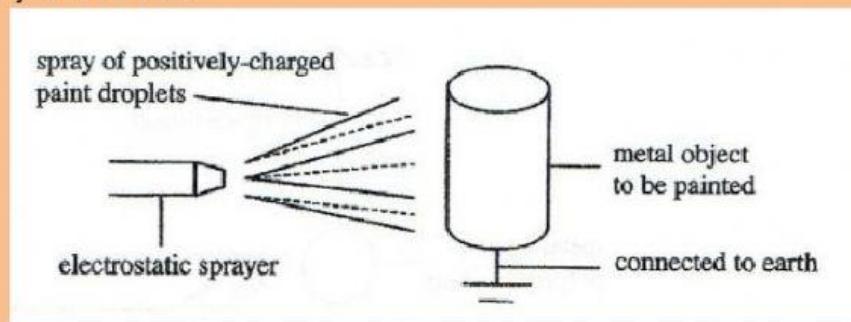


The spheres are then separated and finally the charged rod is removed. Which diagram shows the charges on the spheres?



SHORT ANSWER QUESTIONS

1. (2010 P2 Q4) The diagram below shows an electrostatic paint sprayer that is used to obtain a uniform coat of paint metals. The paint is sprayed in the form of positively-charged droplets. The metal object is earthed.

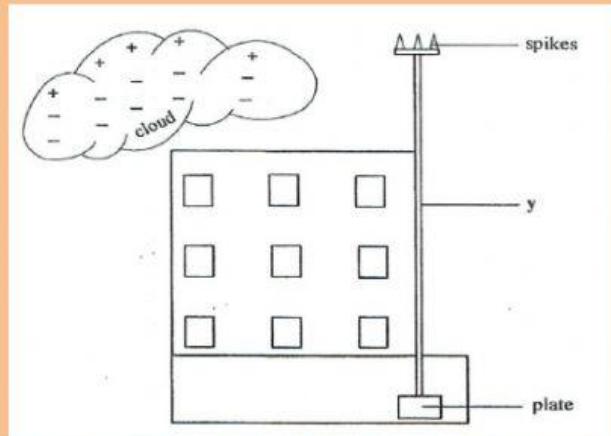


A. Explain why the paint droplets are attached to the metal. (2)

B. Explain why the positive charge on the paint droplets help them spread out uniformly. (2)

C. Explain why the coat of paint is not uniform if the metal is not earthed. (2)

2. The diagram below shows a negative charged thundercloud passing over a tall building fitted with a lightning conductor.



A. Explain how the thundercloud gains its negative charge.

(2)

B. What effect does the negative charge on the cloud have on the building below?

(2)

C. Explain how the lightning conductor prevents lightning from striking the high building. (2)

D. Describe the movement of charges during this process.

(2)

E. Identify the type of charge left on the spikes after the cloud passes over the building.

(2)

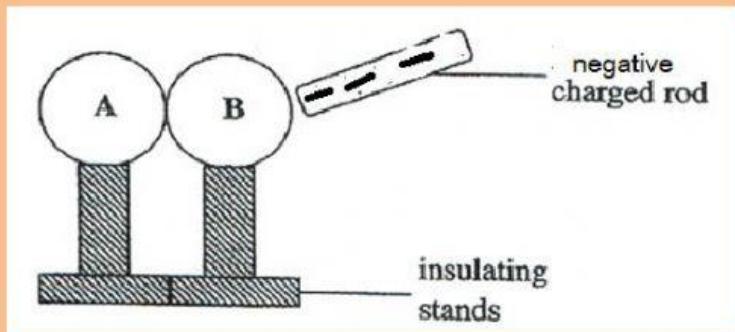
3.

A. A polythene rod is charged by rubbing it with a soft cloth. The rod attains a positive charge. With reference to the movement of electrons during rubbing, state how each attained their charge. (2)

(i) cloth _____

(ii) polythene rod _____

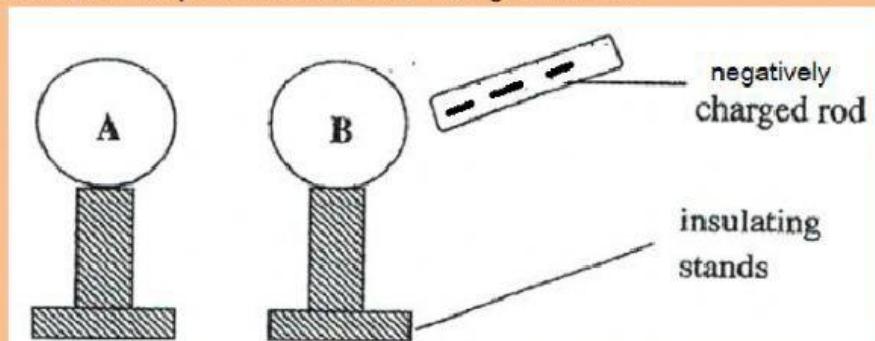
B. Two neutral metal spheres A and B on insulating stands are touching each other. A negatively charged rod is brought close to the spheres as shown in the diagram below.



(i) Name the process that takes place, on the metal spheres, when the charged rod is brought close to the insulated metal spheres. (1)

(ii) Describe in terms of movement of electrons how this process occurs. (2)

C. Spheres A and B are then separated using the insulating stands, keeping the positively charged rod close to sphere B. Shown in the diagram below.

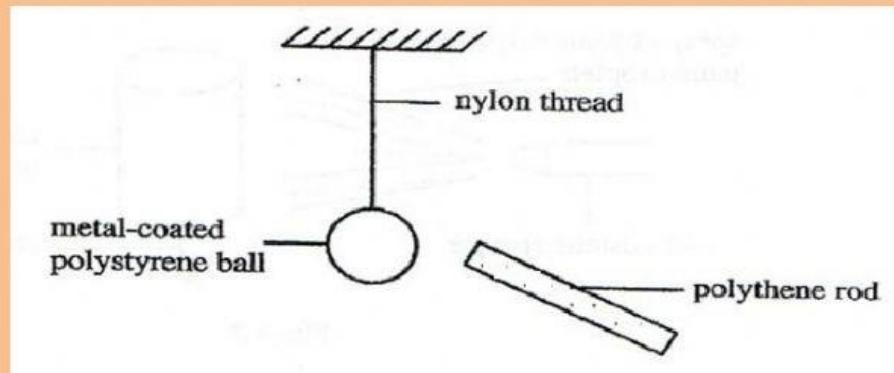


State the charges left on spheres A and B when the spheres are separated. (2)

Sphere A _____

Sphere B _____

4. (2010 P2 Q4) The diagram below shows a positively charged polythene rod brought close to an uncharged, suspended metal-coated polystyrene ball.



(a) (i) Briefly describe what is seen to happen to the polystyrene ball. (1)

(ii) Explain your answer to part (a) (i). (2)

(iii) Explain how the polythene rod can becomes a positive charge. (1)

(iv) Describe what the rod gains or loss in the process of being positively charged. (1)

(v) Explain why it is easy to charge a polythene rod, but not a copper rod. (2)
