



CLASS VIII: Science  
Chapter 12: Some Natural Phenomena

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**Q1.** Which of the following cannot be charged easily by friction ?

- (a) A plastic scale (b) A copper rod  
(c) An inflated balloon (d) A woollen cloth.

**Ans.** Option (b) is correct.

Insulating materials can be easily charged by friction. Copper is a highly conducting materials. Therefore, a copper rod cannot be charged easily by friction.

**Q2.** When a glass rod is rubbed with a piece of silk cloth the rod

- (a) and the cloth both acquire positive charge.  
(b) becomes positively charged while the cloth has a negative charge.  
(c) and the cloth both acquire negative charge.  
(d) becomes negatively charged while the cloth has a positive charge.

**Ans.** Option (b) is correct.

The glass rod becomes positively charged, while the silk cloth has a negative charge.

When an object is charged by rubbing it against another object, the two objects get oppositely charged. By convention, it is considered that the charged acquired by the glass rod is positive and charged acquired by the cloth is negative.

**Q3.** Write T against true and F against false in the following statements:

- (a) Like charges attract each other (T/F)  
(b) A charged glass rod attract a charged plastic straw (T/F)  
(c) Lightning conductor cannot protect a building from lightning (T/F)  
(d) Earthquakes can be predicted in advance (T/F)

**Ans.** (a) False

Like charges repel each other, unlike charges attract each other.

(b) True

A charged glass rod has a positive charge while a charged plastic straw has a negative charge thus, they attract each other as unlike charges attract each other.

(c) False

Lightning conductor is a device to protect a building against lightning.

(d) False

Although the causes of earthquakes is known, but no instrument could be invented to detect it till now. Hence, earthquakes cannot be predicted in advance.



**Q4.** Sometime, a crackling sound is heard while taking off sweater during winters. Explain.

**Ans.** When a sweater is taken off, the woollen sweater gets charged because of the friction between the sweater and the body. Thus, an electric discharge (spark) is takes place between the body and the sweater. This produced a crackling sound, even a spark (light) can be see if the sweater is taken off in a dark room.

**Q5.** Explain why a charged body loses its charge if we touch it with our hand.

**Ans.** When we touch a charged object, our body conducts its charges to the earth. That is why a charged body loses its charge, if we touch it with our hand.

**Q6.** Name the scale on which the destructive energy of an earthquake is measured. An earthquake measures 3 on this scale. Would it be recorded by a seismograph ? Is it likely to cause much damage ?

**Ans.** The Richter scale has the readings from 1 to 10. The reading of magnitude 3 on the Richter scale would be recorded by a seismograph. If the Richter scale gives a reading of magnitude 3, then the earthquake is not likely to cause much damage. Generally, earthquake of magnitudes higher than 7 is considered destructive in nature.

**Q7.** Suggest three measures to protect ourselves from lightning.

**Ans.** (1) If you hear thunder, rush to a safer place like a house or a building. If you are travelling by car or by bus, you are safe inside with windows and doors of the vehicle shut.

(2) Lightning can strike telephone cords, electrical wires and metal pipes. During a thunderstorm contact with these should be avoided.

(3) Bathing should be avoided during thunderstorms to avoid contact with running water.

**Q8.** Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon ?

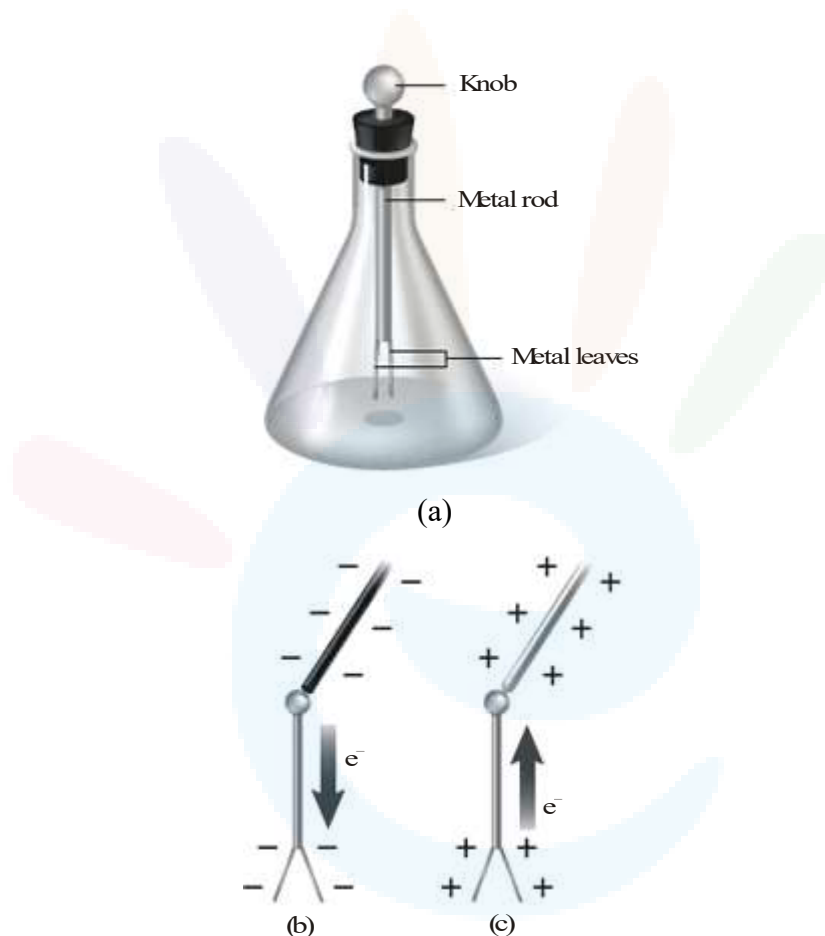
**Ans.** The nature of charges present on the surface of charged balloons are similar. Since like charges repel each other, two charged balloons repel each other. When a charged body is brought near an uncharged body, the near end of the uncharged body acquires opposite charge and far end acquires similar charge due to process of induction. Since the opposite charge is near as compared to the similar charge, there is a net attractive force between them. Hence, an uncharged balloon is attracted by another charged balloon.

**Q9.** Describe with the help of a diagram an instrument which can be used to detect a charged body.

**Ans.** The leaf electroscope is an instrument used to detect the presence of electric charge on a body. It contains a vertical metal rod, with a round metal ball or knob on top, housed in a box. The metal rod and the box are insulated with each other by hard rubber or amber. Two very thin leaves of gold (or aluminium) are attached to bottom end of the rod.

**Detection of presence of charge on a body using electroscope :** When the electroscope is

uncharged, the two leaves hang parallel and vertically downwards due to its own weight [see fig.(a)]. Suppose a negatively charged rod touches the knob. Because the metal is a good conductor, electrons travel down the rod into the leaves. Both the leaves become negatively charged as they gain electrons [see fig.(b)]. Because the leaves have similar charges, they repel each other. When the positively charged glass rod is brought into contact with the metal knob of an uncharged electroscope, electrons flow out of the metal leaves and onto the rod. The leaves repel each other because each leaf becomes positively charged as it loses electrons [see fig.(c)].



**Q10.** List three states in India where earthquakes are more likely to strike.

**Ans.** Jammu and Kashmir, Gujrat, and Uttaranchal.

**Q11.** Suppose you are outside your home and an earthquake strikes. What precaution would you take to protect yourself ?

**Ans.** (1) Try to find a clear spot, away from buildings, trees and overhead power lines. Drop to the ground.

(2) If you are in a car or a bus, do not come out. Ask the driver to drive slowly to a clear spot. Do not come out till the tremors stop.



**Q12.** The weather department has predicted that a thunderstorm is likely to occur on a certain day. Suppose you have to go out on that day. Would you carry an umbrella ? Explain.

**Ans.** Carrying umbrella is not a good idea at all during thunderstorms.

As a lightning flash travels toward the ground from a nearby cloud, it looks for the tallest object. This is because all the objects attached to the ground acts as ground or earthed objects. So lightning takes the shortest path to travel and thus, falls on the tallest object. If you're holding an umbrella in an area surrounded by taller buildings, it's not so risky. But if you are the only tall object in the place surrounding you, the lightning flash will fall on you. Thus, carrying umbrella is not a good idea at all during thunderstorms.

