Some Natural Phenomena

Q.1 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

Sol: (b) A copper rod

Q.2 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.

Sol: (b) becomes positively charged while the cloth has a negative charge.

Q.3 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 attracts 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)

Sol:

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

Q.4 Sometimes, a crackling sound is heard while taking off a sweater during winters. Explain.

Sol: A crackling sound is heard while taking off a sweater during winters because of electric discharge between sweater and body due to the friction.

Q.5 Explain why a charged body loses its charge if we touch it with our hand.

Sol: A charged body loses its charge if we touch it with our hand because our body is good conductor of electric charge. So, it conducts the electric charges to the earth. In this way a charged body loses its charge.

Q.6 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?

Sol: The destructive energy of an earthquake is measured on a scale called Richter scale. An earthquake which measures 3 on this scale. Yes, it would be recorded by a seismograph as this scale has read range from 1 to 10. This intensity of earthquake is not likely to cause any damage.

Q.7 Suggest three measures to protect ourselves from lightning.

Sol: Three measures to protect ourselves from lightning are:

1. Stay in your home or under covered area.
2. No need to take bath during lightning.
3. Do not use any electrical appliances like TV, fridge etc. during lightning.

Q.8 Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon?

Sol: A charged balloon is repelled by another charged balloon because both balloons have the same charge and like charges repel each other.

When an uncharged balloon comes closer to a charged balloon, the uncharged balloon gets charged with opposite charge through induction and unlike charges attract each other. Thus, both the balloons attract each other.

Q.9 Describe with the help of a diagram an instrument which can be used to detect a charged body.

Sol:

It is a device which is used to detect the charged on any object. Its working principle is like charges repel while unlike charges attract each other.

When a charged object is touched with its end of the paper clip, its metal strips repel each other, it proves that the body is charged because repulsion of metal strips show that a body is charged or not.

Q.10 List three states in India where earthquakes are more likely to strike.

Sol: The three states in India where earthquakes are more likely to strike are:

1. Jammu and Kashmir
2. Rajasthan
3. Gujarat

Q.11 Suppose you are outside your home and an earthquake strike. What precaution would you take to protect yourself?

Sol: If we are outside from home and an earthquake strike. Then the following precautions we would take to protect ourselves.

(i) We should move to an open area.
(ii) We should not take shelter under trees, buildings and overhead power lines.
(iii) If we are in car or bus, will not come out. We would ask to driver to drive slowly and move to a clear spot.

Q.12 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.

Sol: No, carry an umbrella is not advisable during thunderstorm because electric discharge from the clouds can travel through the metallic rod of your umbrella which can very dangerous to you.