

**PARAGON CONVENT SCHOOL**

**SECOTR : 24 B, CHANDIGARH**

**LESSON - 15**

**SOME NATURAL PHENOMENON**

**Summary :**

- When two objects are rubbed against each other, one of them becomes positively charged and the other becomes negatively charged.
- Static charge is the accumulated charge in a body. This charge does not transfer.
- Static charge can be measured with the help of a device called electroscope.
- Transfer of charge from a charged body to the Earth is called earthing.
- A spark is created when opposite charges accumulate close to each other and the air between them heats up and starts glowing.
- Lightning is a big electric spark created between the clouds and the Earth.
- A lightning rod protects from lightning by transferring the charge coming from clouds to the ground.
- An earthquake is the sudden shaking of the Earth's crust when its plates rub past each other.
- An earthquake is measured on the Richter scale.
- The point on the surface of Earth below which the earthquake originates is called its epicentre.
- Earthquakes can cause destruction of property and life, landslides and tsunamis.

**Multiple Choice Questions (Page No. 215)**

1. (a)      2. (a)      3. (a)      4. (b)      5. (a)

### **Multiple Choice Questions (Page No. 222)**

1. (c)      2. (c)      3. (a)      4. (d)

### **SECTION A**

#### **Oral Questions**

Q1.- Name any four destructive natural phenomena.

Ans.- Storms, cyclones, lightning, earthquakes

Q2.- What happens when ebonite rod is rubbed with the wool?

Ans.- When ebonite rod is rubbed with the wool, it gets negatively charged.

Q3.- What things were used in Benjamin Franklin's kite experiment?

Ans.- A kite, silk string, iron key, silk ribbon, thin metal wire and Leyden jar

Q4.- What are tectonic plates?

Ans.- The surface of the earth is not one continuous piece. It is broken into many large pieces called tectonic plates.

#### **Science Quiz**

Q1.- What is the point vertically above the seismic focus called?

Ans.- Epicentre

Q2.- Name the sea waves caused by an earthquake under the ocean floor.

Ans.- Tsunamis

Q3.- Which electroscope is used to find the nature of charge of an object - charged or uncharged?

Ans.- Charged

#### **Tick (✓) the correct options**

1. (d)      2. (b)      3. (b)      4. (c)

**Circle the odd ones. Give reasons for your choice**

1. Cyclone            Lightning            Pollution            Earthquake

Ans.- Pollution → It is not a natural phenomenon, whereas others are natural phenomena.

2. Crust            Core            Ocean            Mantle

Ans.- Ocean → It is not the layer of earth, whereas others are layers of the earth.

3. Landslide            Tsunami            Flood            Drought

Ans.- Drought → It is not caused due to earthquakes, whereas others are consequences of an earthquake.

**Fill in the blanks**

1. electric current            2. thunder            3. faults            4. seismic waves

**SECTION B**

**Multiple Choice Questions**

1. (b)            2. (a)            3. (b)

**Very Short Answer Questions**

Q1.- When an object is said to be charged?

Ans.- An object is said to be charged when it acquires electric charges by rubbing or by any other method from another object.

Q2.- Name the instrument for measuring the intensity of an earthquake.

Ans.- Seismograph

Q3.- What do you mean by thunder?

Ans.- The loud sound produced during lightning is called thunder.

Q4.- Why does a comb rubbed on dry hair attract pieces of paper?

Ans.- A comb rubbed on dry hair attracts pieces of paper because a kind of force is

produced between them, which is called electrostatic force.

### **Short Answer Type-I Questions**

Q1.- What is meant by charging by friction?

Ans.- Charging an object by rubbing it with another object is called charging by friction.

Q2.- What is an earthquake? Name the scale which describes the magnitude of an earthquake.

Ans.- An earthquake is a sudden shaking of the earth's crust which lasts for a very short time. Richter scale is a scale used for describing the magnitude of an earthquake.

Q3.- What is meant by electrostatic force?

Ans.- The force exerted by a charged object on another charged or uncharged object is known as electrostatic force.

Q4.- Why do we say that repulsion is a sure test of charge on an object?

Ans.- We say that repulsion is a sure test of charge on an object. When the object being tested is repelled by a charged object, we are sure that the object under examination is charged and has the same charge as that on the charged object.

### **Short Answer Type- II Questions**

Q1.- List any three causes and effects of earthquake.

Ans.- The three causes of earthquake are -

- (i) Movement of the tectonic plates
- (ii) Volcanic eruption
- (iii) Dislocation (or faults) of the crust
- (iv) Underground nuclear explosion

The three effects of earthquake are :

(i) Human-made structures like buildings, railway tracks, road, bridges, dams, etc., get severely damaged in earthquake. People can get trapped inside the collapsed structures and many may die

(ii) Fire often breaks out following earthquakes which can be caused by sparking from electrical short circuits.

(iii) Groundwater pipes usually rupture, totally disrupting municipal water supply systems.

(iv) Earthquakes can change the course of rivers and cause floods

(v) Tremors in hilly areas and mountains cause landslides.

Q2.- What are the harmful effects of lightning?

Ans.- The harmful effects of lightning are -

(i) It can cause fire and shatter buildings, resulting in lot of destruction and damage to the property.

(ii) It can burn trees and also cause forest fires.

(iii) It injures or sometimes even kills animals and people instantly.

Q3.- Sameer goes to the market with his younger brother, Sachin on a bicycle. While returning, a sudden thunder and lightning strike the nearby place. They both get scared. Sameer and his brother take shelter in a building although there is a tall tree nearby.

A) Why did Sameer and Sachin not take shelter under the tree?

B) Has Sameer done the right thing in your opinion? Why / Why not?

Ans.- (a) Sameer and Sachin did not take shelter under the tree because trees provide a good conducting path for lightning.

(b) Yes, he did the right thing to save himself and his brother's life.

Q4.- If you are outside your home and an earthquake occurs, what precautions would you take to protect yourself.

Ans.- Precautions to be taken during an earthquake -

- (i) Move to an open area immediately.
- (ii) Move away from buildings, trees, bridges, flyovers or overhead electric cable lines or any other structures that can collapse.
- (iii) While travelling in a car or bus do not come out. Drive slowly to an open area.

### Long Answer Questions

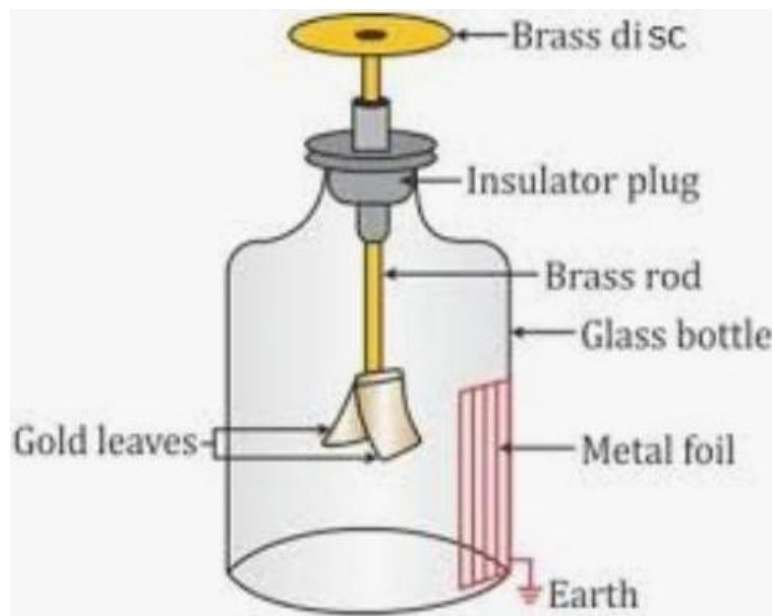
Q1.- a) What is gold-leaf electroscope?

b) Draw its labelled diagram.

c) List its uses.

Ans.- (a) An electroscope is an instrument used for detecting electrical charge and its nature on an object.

(b)



(c) Uses of a gold-leaf electroscope are :

- (i) Detection of electrical charge
- (ii) To identify the nature of brass disc charge

Q2.- a) How does lightning strike the ground?

b) What is a lightning conductor?

c) How can lightning conductors protect tall building?

d) Give two safety measures to be taken during thunderstorm.

Ans.- (a) A cloud has the negative charges concentrated at the base and positive charges concentrated at its upper region. When a charged cloud passes over a tall building or a tall tree, it induces an opposite charge on them. The negative charges at the base of the clouds pull the positive charges induced on the tall buildings upwards at a tremendous speed. As soon as the negative and positive charges connect, a continuous path is formed from the cloud to the tall building or a tree on the ground. The large amount of negative charges accumulated in the clouds rushes down this path, giving rise to an electric discharge in the form of lightning strike.

(b) A lightning conductor is a device which is fixed on the top of tall buildings to protect them from damage due to lightning.

(c) When the lightning strikes, the lightning conductor provides an easy path for the charge to pass through to the earth and thus, protects the building.

(d) Safety measures to be taken during thunderstorm are:

(i) Do not take shelter under a tree because trees provide a good conducting path for lightning.

(ii) Do not take bath or shower during storms, as water is an excellent conductor of electricity.

Q3.- a) What is a volcano?      b) How do volcanoes cause earthquake?

Ans.- (a) Volcano is a hole in the earth's crust through which the molten rocks and hot gases under high pressure rush out.

(b) The energy released during volcanic eruptions causes vibrations in the crust. These vibrations can cause earthquakes in the area around.