St. Andrews Scots Sr. Sec. School

9th Avenue, I.P. Extension, Patparganj, Delhi – 110092
Session: 2024-2025 – Answer Key

Class: VIII **Subject: Science** **Topic: Some Natural Phenomena**

CHECK POINT 1

1. Negative (Electron)

2. Positive

3. Electric current

4. Electroscope

5. Lightning conductor

CHECK POINT 2

1. (F) 2. (T) 3. (T) 4. (F) 5. (T)

PRACTICE TIME

A. Tick (√) the correct answer:

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

B. Fill in the blanks:

1. coulomb

2. electroscope

3. earthing

4. static

5. inner core

C. Very Short Answer Type Questions:

1. Lightning.

2. Benjamin Franklin was an American scientist, who conducted his famous Kite and Key Experiment in 1752 and proved that lightning is nothing but a huge electric spark taking place between clouds.

3. The two types of charges are negative and positive charges.

4. Electroscope is used to detect the presence of charge on an object.

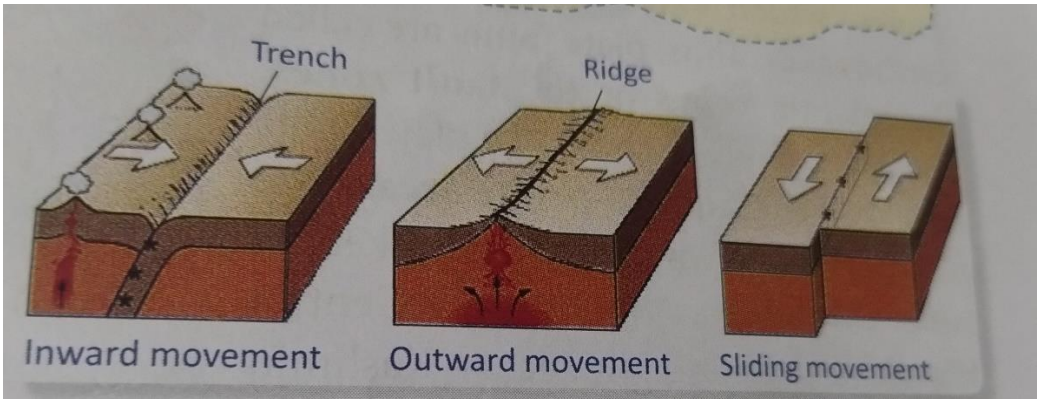
5. Thunder.

D. Short Answer Type Questions:

1. When two objects are rubbed against each other, both of them get charged due to loss or gain of electrons. The two acquire equal and opposite charges because the number of electrons lost by one object is captured by the other.

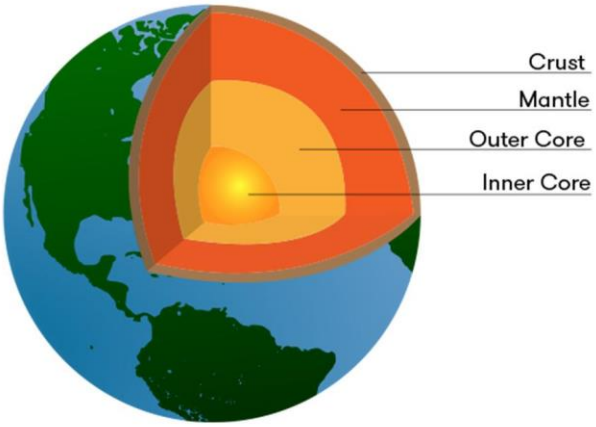
2. A lightning conductor is a device used to protect buildings against the damage caused by lightning, by providing the charges an alternative and easy path to flow down to the earth.

3. An earthquake is caused by the disturbance deep inside the earth plates. These plates are in continuous motion. When they brush past one another or a plate goes under another due to collision, they cause disturbance in the earth's crust. This disturbance sets up an earthquake on the surface of the earth.



Causes of an earthquake

4. There are four major layers of the earth. Starting from the centre, these layers are named as inner core, outer core, mantle and the crust.



Layers of Earth Surface

5. The intensity of an earthquake is measured on a Richter scale. The magnitude of the intensity of an earthquake is measured in whole numbers and decimal numbers on this scale. Every whole number has a value equivalent to 10 times the previous whole number. That is,

the power of an earthquake of a magnitude 3 on Richter scale is 10 times that of a magnitude 2 on the same scale. Thus, an increase of measure 1 on the Richter scale is practically 10-fold increase in the magnitude (power) of an earthquake.

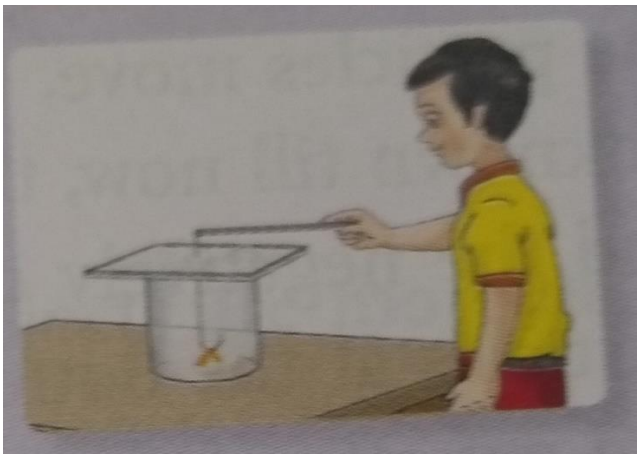
Richter Scale of Earthquake Energy:

Each level is 10 time stronger than the previous level

	Description	Occurrence	In Population	Movement
1	Small	Daily	Every minute	Small
2	Small	Daily	Every hour	Small
3	Small	Daily	Every day	Small
4	Small	Daily	Every week	Moderate sudden
5	Moderate	Monthly	Every 10 years	Strong Sudden
6	Moderate	Monthly	Every 30 years	Strong Sudden
7	Major	Monthly	Every 50 years	Severe Sudden
8	Great	Yearly	Every 100 years	Very Severe
9	Great	Yearly	Every 300 years	Very Severe
10	Super	Rarely	Every 1.000 years	Extreme

E. Long Answer Type Questions:

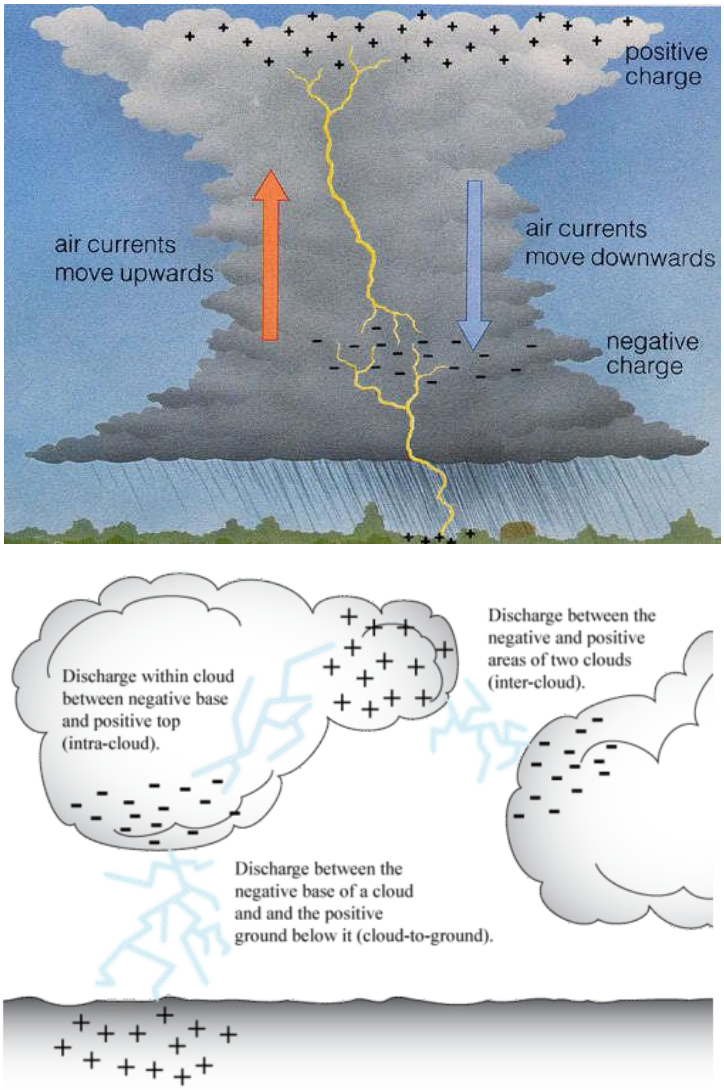
1. When we touch the metal wire of electroscope with the charged straw, the charge flows through the metal wire to the aluminium strip, as the straw has high level of charge and the metal wire has low (no) charge on it. The two halves of aluminium strip acquire same type of charge from the straw and they separate apart due to repulsion caused by similar charges. The aluminium strip is now charged. When we touch the metal wire with our hand, charge from the foil strip (high level) flows to the zero level charge on our hand, and therefore, the repulsion experienced by the two halves of strip is vanished.



Working of an electroscope

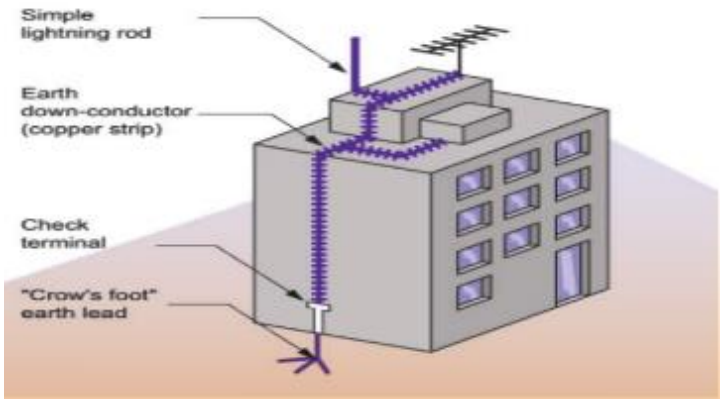
2. The clouds get charged when water and ice particles move rapidly inside them. As the particles move, they become oppositely charged and separate. The positively charged particles move to the upper part of the cloud and the negatively charged particles rest at the lower part of the cloud. The negative particles at the bottom of the cloud grow bigger and bigger, and get attracted to the positive charges on the ground. The positive charge on the

earth's surface develops only due to the negative charge on the lower part of the cloud. When attraction between the opposite charges becomes strong, electricity (electrons) flows from the clouds to the ground. This causes spark (lightning) in the sky. Lightning lasts only for a fraction of a second, but is energy-filled and very hot.



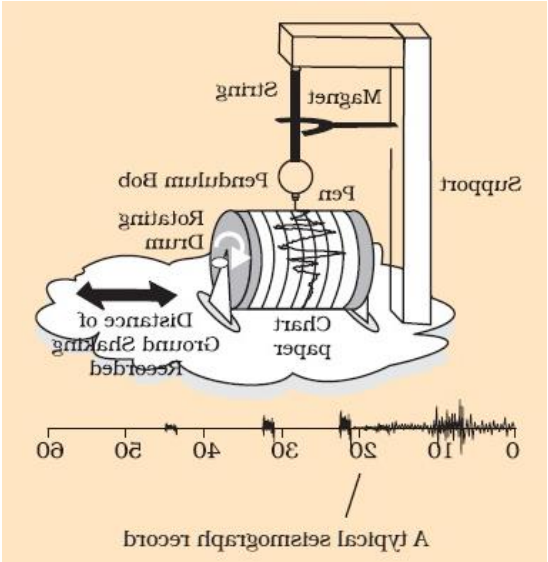
Oppositely charged clouds produce lightning

3. A lightning conductor consists of a long metal rod, fixed with a side wall of the building to be protected such that its upper end protrudes much above the top of the building. The upper end of the rod is made into the shape of a trishul or is fragmented into large number of pointed rods. The lower end of the rod runs deep inside the earth, where it is joined with an already buried huge copper plate. When lightning strikes, the upper pointed ends of the lightning conductor quickly absorb the charges, the long metal rod gives them an easy path to flow down to earth and the copper plate helps in a quick distribution of charge. In this way, the building is saved from the damage.



Lightning Conductor

4. A seismograph is an instrument which detects and records seismic waves generated by the earthquake. A seismograph consists of a rod of a pendulum suspended from a stand, whose lower end is attached with a pen. When an earthquake occurs, the rod or the pendulum vibrates and so does the pen. A roll of a long and thin strip of paper, rolled on a drum is allowed to move under the vibrating pen, so that the pen leaves the marks of the vibration on the strip of the paper. The study of the recorded vibrations helps to map the earthquake completely.



Seismograph

5. If trapped in a collapsed building, one should

(a) protect his/her airway against dust and debris by breathing through a dust mask kept in a nearby drawer or a clean cotton cloth.

(b) check injuries and control any bleeding and should try to find a source of light, if possible.

(c) try to make his/her location known to the rescuers by tapping on a solid object.

(d) save the energy and breathe. Delay shouting for help until hear or feel rescuers very nearby.

(e) the collapsed walls make triangular spaces after falling. These triangular spaces are the safest places to protect oneself, until a help reaches.

6. (a) Lightning conductor.

(b) It is a safety device that saves the building from lightning.

(c) The earth behaves as a huge reservoir of charge opposite to that of the cloud. When the lightning occurs, the charge flows to the earth and gets neutralised that is why Y-shaped structure is connected to the ground.

F. HOTS Questions:

1. The upper end of a lightning conductor is fragmented into several pointed strips so that when lighting strikes, these strips absorb the charges quickly.

2. When two objects are rubbed against each other, they get charged due to loss or gain of electrons.

3. Electrical appliances have an earthing wire to discharge any leakage of current by earthing and save the user from an electric shock.