St. Andrews Scots Sr. Sec. School

9th Avenue, I.P. Extension, Patparganj, Delhi – 110092
Session: 2025-2026 – Answer Key

Class: VIII **Subject: Science** **Chapter: 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. Assertion-Reason Type Questions:

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

C. Fill in the blanks:

1. coulomb 2. electroscope 3. earthing 4. static 5. inner core

D. 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. Central and Western Himalayas, Kashmir, Rann of Kutch, North-East India and Indo-Gangetic plain.

E. 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. **The December 26, 2004 Indian Ocean tsunami** was caused by an earthquake that is thought to have had the energy of 23,000 Hiroshima-type atomic bombs. The epicenter of the 9.0 magnitude quake was located in the Indian Ocean near the west coast of Sumatra. The violent movement of the Earth's tectonic plates displaced an enormous amount of water, sending powerful shock waves in every direction. The tectonic plates in this area had been pushing against each other and building pressure for thousands of years. The rupture was more than 600 miles long, displacing the seafloor by 10 yards horizontally and several yards vertically. As a result, trillions of tons of rock moved, causing the largest magnitude earthquake in 40 years.

The **2001 Gujarat earthquake**, also known as the **Bhuj earthquake**, occurred on 26 January at 08:46 am IST. The epicentre was about 9 km south-southwest of the village of Chobari in Bhachau Taluka of Kutch district in Gujarat.

Bhuj earthquake was caused by built-up stress from the Indian Plate pushing north into the Eurasian Plate, rupturing a previously unknown, shallow, east-west trending reverse fault (a thrust fault) beneath the Kutch region, classifying it as an intraplate or interplate event on a diffuse plate boundary. This immense tectonic pressure, concentrated over time, finally released suddenly, causing the devastating shaking.

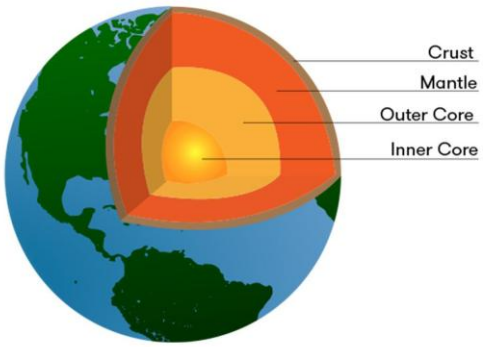
4. There are four major layers of the earth. Starting from the centre, these layers are named as inner core, outer core, mantle and the crust.

Crust-The Earth's outermost, thinnest layer, broken into tectonic plates, consisting of continental (granite) and oceanic (basalt) crust.

Mantle - The thickest layer, mostly solid rock (peridotite), but capable of slow flow (like thick tar) in its upper part (asthenosphere).

Outer core -A liquid layer of super-hot iron and nickel, responsible for Earth's magnetic field.

Inner core - A solid ball of iron and nickel at the centre, incredibly hot but solid due to immense pressure.



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.

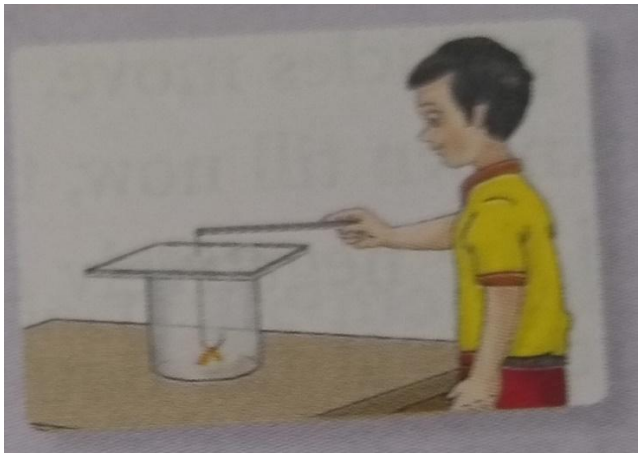
Richter Scale of Earthquake Energy:

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

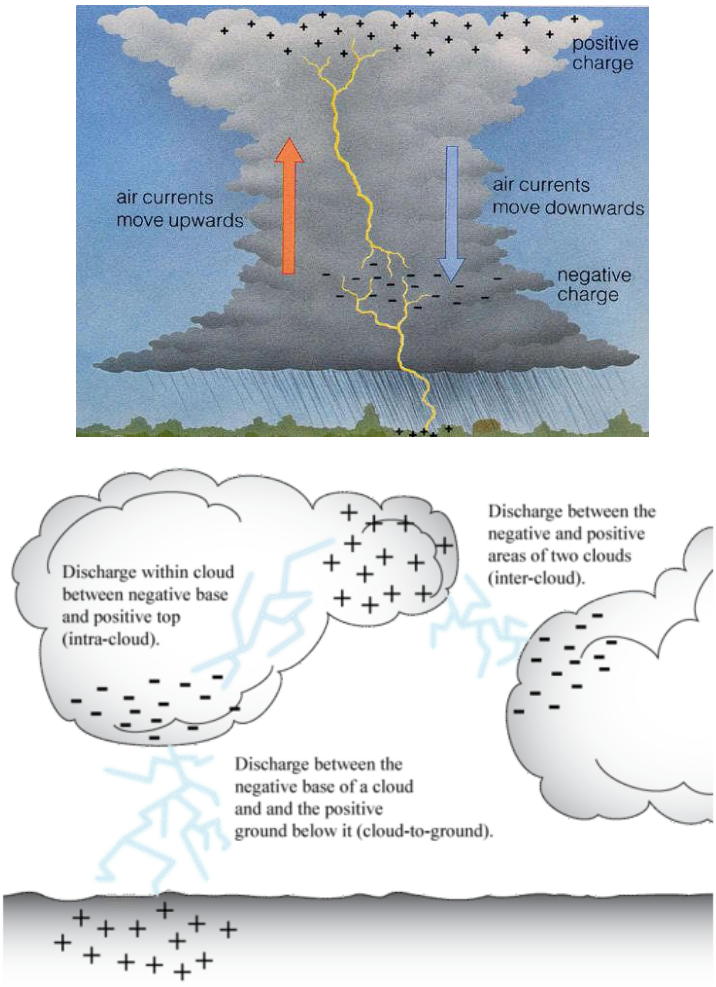
F. Long Answer Type Questions:

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

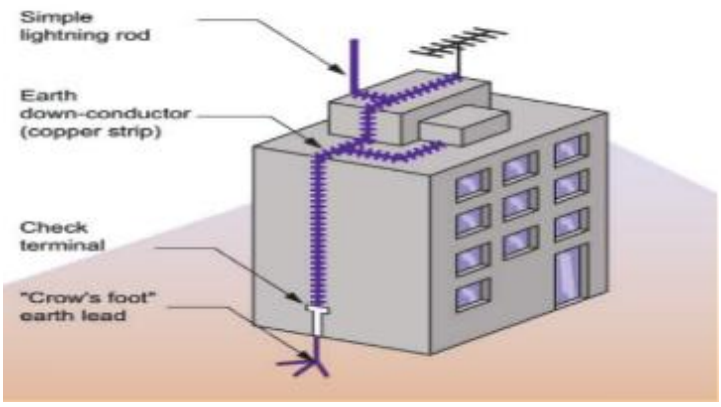
2. The clouds get charged when water and ice particles move rapidly inside them. As the particles move, they become oppositely charged and separate. The positively charged particles move to the upper part of the cloud and the negatively charged particles rest at the lower part of the cloud. The negative 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

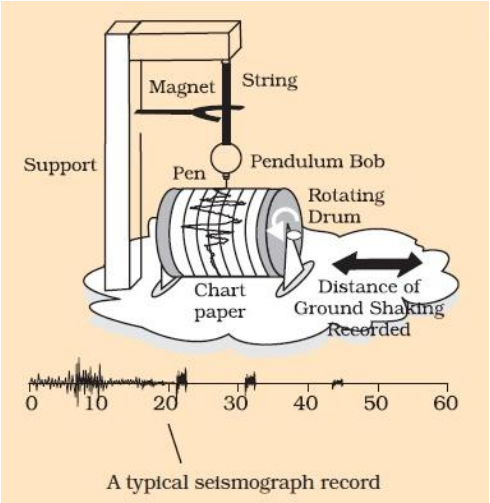
3. A lightning conductor consists of a long metal rod, fixed with a side wall of the building to be protected such that its upper end protrudes much above the top of the building. The upper end of the rod is made into the shape of a trishul or is fragmented into large number of pointed rods. The lower 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 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.

G. 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. Due to this reason, static electricity is generated by the friction of sweater and the body. When this charge discharges, it produces crackling sound.

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

4. Precautions to be taken during lightning when outdoors:

- Seek cover indoors as quickly as possible.
- Do not stand near or under a pole, tree, etc.
- Keep away from metal objects like poles, fences, benches, etc.
- Crouch low, with your head bent in between your arms and legs close together.

Passage/Case-based Questions

1. Lightning and thunder actually occur at the same time but we see lightning sparks before hearing the sound of thunder because speed of light is much more than the speed of sound. 2. To avoid accidents due to lightning, we should get indoors immediately and should stay away from doors, windows, plumbing, etc. If outside home, we should not stand under a tree or near a pole and also should not use umbrella.

K. Value-based Questions:

1. If stuck indoors during an earthquake, follow drop, cover and hold protocol. Cover your head with a pillow and hide under a sturdy structure such as a table. Stand in a corner, preferably in the centre of the house.

2. An earthquake is caused due to the collision of tectonic plates inside the earth’s crust.

3. The values shown by Ms. Sunita are preparedness and awareness.