
 INDIAN SCHOOL AL WADI AL KABIR 		
Class: VIII	DEPARTMENT: SCIENCE-2022-2023	DATE: 11-09-2022
WORKSHEET NO.8 WITH ANSWERS	TOPIC: SOME NATURAL PHENOMENA	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWER (1M):

- Which are the two kinds of electric charges? [**Positive and negative**]
- What is lightning? [**The lightning is an electric spark on a huge scale which is caused by the accumulation of electric charges in the clouds.**]
- What are tectonic plates? [**The earth's lithosphere (crust and some parts of the upper mantle) is fragmented into many pieces of slabs or plate of rocks called tectonic plates. These plates are in continuous motion.**]
- Name any two devastating natural phenomena. [**Earthquake, Tsunami, Cyclone, Flood**]
- What is fault? [**The boundaries of tectonic plates are the weak zones where earthquakes occur. These weak zones are also known as seismic zones or fault zones.**]
- Mention the interaction of two types of charges. [**Like charges repel each other, unlike charges attract each other**]
- What is amber? What happens when amber rubbed with a fur is brought near a small feather? [**Amber is a kind of resin. It attracts the feather**]
- What is meant by earthing? [**The process of transferring of charges from a charged body to the earth is called earthing.**]
- What is a seismograph? [**Tremors or vibrations caused by the earthquakes which travel in the form of waves within the earth or along the earth's surface, are called seismic waves. Seismograph is an instrument which records these waves.**]
- When a charged glass rod is brought near a charged plastic straw (rubbed with polythene), there is attraction between the two. What is the nature of the charge on the plastic straw? [**Negative**]

For the question numbers 11,12 and 13, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

i) Both A and R are true and R is correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true

11. Assertion (A): When we touch a charged body, it loses its charge, due to the process of Earthing.

Reason (R): Our body is a good conductor of electricity and so it transfers the charges to the earth.

i) Both A and R are true and R is the correct explanation of assertion.

12. Assertion (A): We should not stand under tall trees, shelters in park or near any elevated place during lightning.

Reason (R): Electrical appliances should be unplugged during lightning.

ii) Both A and R are true but R is not the correct explanation of assertion.

13. Assertion (A): Magnitude of an earthquake is measured on the Richter scale.

Reason (R): The earthquake measuring 7 or more on Richter scale can cause less impact to life and property.

iii) A is true but R is false.

II.PASSAGE BASED QUESTIONS:

Read the passage and answer the following questions.

An earthquake is a natural phenomenon whose occurrence cannot be predicted. It can cause damage to human life and property on a huge scale. An earthquake is a sudden shaking or trembling of the earth lasting for a very short time. It is caused by a disturbance deep inside the earth's crust. Earthquakes occur all the time, all over the earth. They are not even noticed. Major earthquakes are much less frequent. They can cause immense damage to buildings, bridges, dams and people. There can be a great loss to life and property. The earthquakes can cause floods, landslides and tsunamis. In ancient times, people did not know the true cause of earthquakes. Their ideas were, therefore, expressed in mythical stories such as the earth is balanced on the horn of a bull and when the bull shifts it to the other horn, an earthquake takes place. Similar myths were prevalent in other parts of the world. The outermost layer of the earth is not in one piece. It is fragmented. Each fragment is called a plate. These plates are in continual motion. When they brush past one another, or a plate goes under another due to collision, they cause disturbance in the earth's crust. It is this disturbance that shows up as an earthquake on the surface of the earth. Although, we know for sure what causes an earthquake, it is not yet possible to predict when and where the next earthquake might occur. Tremors on the earth can also be caused when a volcano erupts, or a meteor hits the earth, or an underground nuclear explosion is carried out. However, most earthquakes are caused by the movement of earth's plates. Since earthquakes are caused by the movement of plates, the boundaries of the plates are the weak zones where earthquakes are more likely to occur. The weak zones are also known as **seismic** or **fault zones**. In India, the areas most threatened are Kashmir, Western and Central Himalayas, the whole of North-East, Rann of Kutch, Rajasthan and the Indo – Gangetic Plane. Some areas of South India also fall in the danger zone. The power of an earthquake is expressed in terms of a magnitude on a scale called **Richter**

scale. Really destructive earthquakes have magnitudes higher than 7 on the Richter scale. Both Bhuj and Kashmir earthquakes had magnitudes greater than 7.5.

i. The earth's plate responsible for causing earthquakes is:

- (a) **the crust and some parts of the upper mantle of the earth**
- (b) the mantle of the earth
- (c) the inner core of the earth
- (d) the outer core of the earth

ii. The magnitude of an earthquake is measured on the:

- (a) Celsius scale
- (b) Decibel scale
- (c) Kelvin scale
- (d) **Richter scale**

iii. The tremors on the earth can be caused by:

- (a) Earthquake
- (b) Volcanic eruptions
- (c) Underground nuclear explosions

(d) **All of the above**

iv. Consider the list of terms given below:

- 1. Seismic Zone 2. Fault Zone 3. Mantle 4. Inner Core.

The boundaries of the earth's plate are known as:

- (a) **1 and 2**
- (b) 3 and 4
- (c) 1 and 3
- (d) 2,3 and 4

v. Consider the list of terms given below

- 1. Tsunami 2. Floods 3. Landslide 4. Lightning.

Earthquakes can cause:

- (a) **1,2 and 3**
- (c) 2, 3 and 4
- (b) 2 and 4
- (d) 3 and 4

III. CASE STUDY BASED QUESTIONS:

Roy and his friends were swimming in a pool. Suddenly he saw a huge flash of light in the sky and heard a loud sound of thunder. His friends continued swimming but Roy asked everyone to stop swimming and be safe. Few of his friends immediately got into the car. Roy and a few of them went inside the nearby building.

i. What should Roy and his friends do to save themselves from a thunderstorm?

- a) They should stop swimming and stand in the pool.
- (b) **They should stop swimming and go inside a building.**
- c) They should continue swimming.
- d) They should run immediately and take shelter under a tall tree.

ii. What should be done by Roy's friends who got into the car?

a) **They should stay inside the car with doors and windows closed.**

b) They should stay inside the car with doors and windows open.

c) They should stay inside the car with doors closed but windows opened.

d) They should stay inside the car with doors opened but windows closed.

Identify the correct statement/statements related to lightning and thunderstorm.

i. Lightning is an electric discharge that occurs in nature on a large scale.

ii. Lightning Conductor is a device used to protect buildings from the effect of lightning.

iii. It is safe to travel on a motorbike during a thunderstorm.

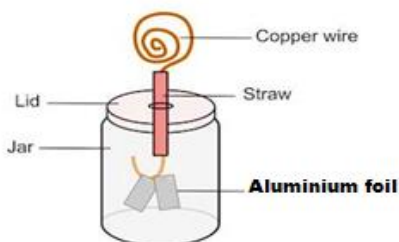
a) **Both i and ii**

b) Both ii and iii

c) Only i

d) Only iii

2. Seetha prepared an electroscope as shown in the figure. She has replaced the copper wire with ebonite rod. When charged body was brought in contact with the ebonite rod, she observed that the aluminium strips did not diverge. What is the reason behind it?



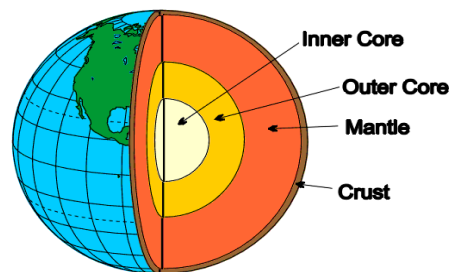
[The charged body will not transfer any charge to the ebonite rod as ebonite rod is an insulator. As a result, there will be no charge on the aluminium strips.]

IV. a) SHORT ANSWER TYPE QUESTIONS (2 M):

1. Why a copper rod cannot be charged by friction, if held by hand? **[Copper is a conductor, as soon as it is charged by rubbing with another material, the electric charge produced on its surface flow through our hand and body into the earth and remains uncharged.]**

2. When a comb is rubbed against hair, the comb attracts the bits of paper. Why? **[When we rub the plastic comb with our dry hair, the plastic comb gets electric charge due to friction. The electrically charged comb then exerts an electric force on the tiny pieces of paper and attracts them.]**

3. We hear crackling sounds when we take off woollen sweaters. Why? **[When we take off woollen sweaters, it rubs against our shirt. The rubbing together of sweater and shirt produces opposite electric charges on them. The discharge of these electric charges produce crackling sound.]**
4. State the difference between electric current and static electricity. **[The most significant difference between the static and current electricity is that in static electricity the charges are at rest and they are accumulating on the surface of the insulator. Whereas in current electricity the electrons are moving inside the conductor.]**
5. Avoid touching metal pipes or electric wires during lightning. Why? **[Lightning can strike the metal pipes or electric wires and can travel through them as they are conductors of electricity. If we touch these objects we get shock because our body is a conductor and charges may flow into our body.]**
6. Draw a neat and labelled diagram to show the structure of earth.



IV. b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. What is a lightning conductor? How does it work? **[A Lightning conductor is a device used to protect buildings from the damaging effects of lightning. A lightning conductor is a metallic rod, taller than the building, installed in the walls of the building during its construction. One end of the rod is kept out in the air and the other is buried deep in the ground. If the lightning strikes a building, it will first hit the top of the lightning conductor rather than the building. The lightning conductor is made of a metallic rod so it provides an easy route for the transfer of electric charges to the ground. The electric discharge occurs through the conductor without harming the building.]**
2. Explain how lightning take place? **[During the development of a thunderstorm, the air currents move upwards while the water droplets move downwards. These vigorous movements of air currents cause separation of charges. The positive charges collect near the upper edges of the clouds and the negative charges accumulate near the lower edges. There is accumulation of positive charges near the ground also. When the magnitude of the accumulated charges become large, the air cannot resist their flow. As a result, negative and positive charges meet producing a streak of bright light and sound, called lightning.]**

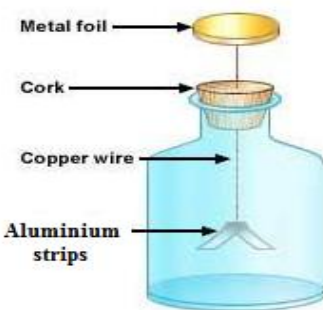
3. What causes an earthquake? [An earthquake is a sudden shaking or trembling of the earth lasting for a very short time. It is caused by a disturbance deep inside the earth's crust. The outermost layer of the earth is not in one piece. It is fragmented. Each fragment is called a plate. These plates are in continual motion. When they brush past one another, or a plate goes under another due to collision, they cause disturbance in the earth's crust. It is this disturbance that shows up as an earthquake on the surface of the earth.]

4. Explain the method of charging by rubbing with an example. [The process of charging an object by rubbing it with another object is called charging by friction/charging by rubbing. When two objects are rubbed together, then both the objects get charged by friction (but with opposite charges). For example, when a glass rod is rubbed with a silk cloth, then both glass rod and silk cloth get charged. Both glass rod and silk cloth can attract tiny bits of paper. The electric charges acquired by glass rod and silk cloth are, however opposite in nature. As a convention, the electric charge acquired by the glass rod (rubbed with silk) is called positive charge. So, the charge acquired by the silk cloth will be negative.]

5. Mention the indoor and outdoor measures to be taken during an earthquake. [*If you are at home:*1. Take shelter under a table and stay, there till shaking stops.2. Stay away from tall and heavy objects that may fall on you.3. If you are in bed, do not get up. Protect your head with a pillow. *If you are outdoors:*1. 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.]

V. LONG ANSWER TYPE QUESTIONS (5 M):

1. Observe the figure and answer the questions given below.



- What will you observe when the metal cap of an electroscope is touched with a charged object? Give reason for your answer. [As like charges repel, strips will diverge as aluminium strips receive same charge as that of the charged object.]
- What happens when we touch the metal cap of a charged electroscope with our finger? [We observe that the strips come back to their original state because they are discharged. When we touch the metallic cap, the charges flow to the earth through our body. This process of transferring charges to the earth is called earthing.]

- c. What is the purpose of providing earthing in the buildings? **[All the electrical appliances and the mains of the houses are connected to the earth, so that we are prevented from getting an electric shock due to any leakage of electrical circuit.]**
- d. State the principle on which electroscope works. **[Like charges repel each other]**
2. a. What precautions would you take if lightning occurs while you are outside the house? **[Open vehicles, like motorbikes, tractors, construction machinery, open cars are not safe. Open fields, tall trees, shelters in parks, elevated places do not protect us from lightning strokes. Carrying umbrella is not a good idea at all during thunderstorms. If in a forest, take shelter under shorter trees. If no shelter is available and you are in an open field, stay far away from all trees. Stay away from poles or other metal objects. Do not lie on the ground. Instead, squat low on the ground. Place your hands on your knees with your head between the hands. This position will make you the smallest target to be struck.]**
- b. If the materials used for constructing a building were good conductors, do you think lightning will strike the building. Will the lightning conductor be still required to be installed in the building? **[No, there is no need to install lightning conductor in the building.]**
- c. Inflate two balloons and hang them in such a way that they do not touch each other. Rub both the balloons with a piece of woollen cloth and release them. Will the balloons attract or repel? Why? **[The balloons will repel each other as both the balloon will receive the same charge on rubbing with woollen cloth]**

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