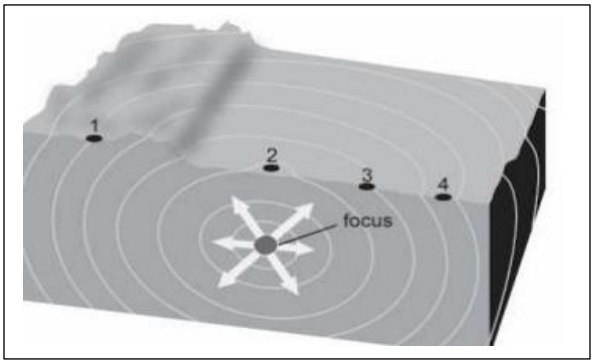
INDIAN SCHOOL AL WADI AL KABIR

CLASS: VIII	**DEPARTMENT: SCIENCE-2023-2024**	**DATE: 05-09-2023**
WORKSHEET NO.8 WITH ANSWERS	**TOPIC: SOME NATURAL PHENOMENA**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE-TYPE QUESTIONS

1. A lightning conductor protects a building from lightning. What is a lightning conductor made of ?
   (a) Glass
   (b) Wood
   (c) Metal
   (d) Plastic
2. Which of these conditions results in lightning?
   (a) **Negative and positive charges meeting**
   (b) The number of negative charges increasing
   (c) The number of positive charges increasing
   (d) Negative and positive charges moving away from each other
3. Amit was travelling in a car when he saw lightning at some distance. He heard a loud thunder after a few seconds. What should Amit do immediately to remain safe?
   (a) Increase the speed of the car
   (b) Decrease the speed of the car
   (c) Stop the car and take shelter inside a building
   (d) Turn the car and travel in the opposite direction
4. The diagram shows the focus of an earthquake. Focus is the point inside the Earth's crust where the earthquake originates. 1, 2, 3 and 4 are four locations on the Earth's surface. In which location will the effect of the earthquake be maximum?



(a) Location 1 **(b) Location 2** (c) Location 3 (d) Location 4

5. Richter scale measures the strength of earthquakes.

Richter scale measurement of the earthquake	Example of damages due to the earthquake
3.0 – 3.9	No damages but some vibrations felt
4.0 – 4.9	Cracks in windows, some unstable objects fall
5.0 – 5.9	Building walls may collapse, movement of furniture
6.0 – 6.9	Building roofs may collapse, loss of few lives
7.0 – 7.9	Cracks on ground, underground pipes broken, loss of many lives

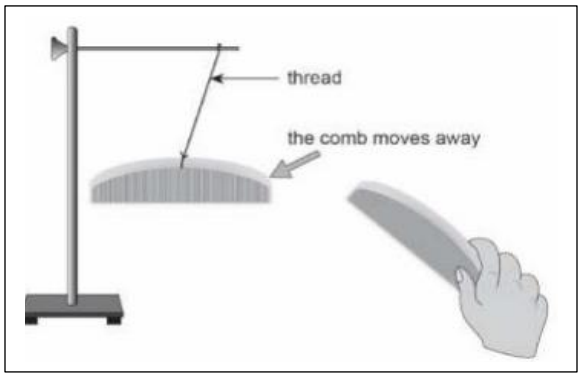
The damages from an earthquake are listed below.

- 2 people died
- 5 building roofs collapsed
- 12 building walls collapsed .

What could be the likely reading on the Richter scale for the earthquake?

(a) 4.8 **(b) 6.5** (c) 5.4 (d) 7.3

6. Ryan rubbed two combs through his hair. He hung one comb from a stand using a thread. Ryan brought the other comb close to the first comb. The picture below shows the result.



Why did the comb move away from the other? If Ryan repeats the activity using a pair of glass rods in place of the combs. What would be the result?

(a) Like charges on the combs: The hanging rod will move away

(b) Material of the thread: The hanging rod will come closer

(c) Colour of the combs: The hanging rod will move away

(d) Shape of the combs : The hanging rod will start spinning

For the following questions, 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

7.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.

8. Assertion (A): We should not stand under tall trees, take shelters in park or stand 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.

9. 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.

10. Assertion (A**):** Electrical charges can be transferred from a charged object to another through a metal conductor.
Reason (R): Metal is a bad conductor of electricity.

iii) A is true but R is false.

II. VERY SHORT QUESTIONS (2M):

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 flows through our hand and body into the earth and remains uncharged.]

2. a)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 an electric charge due to friction. The electrically charged comb then exerts an electric force on the tiny pieces of paper and attracts them.]

b) What is amber? What happens when amber rubbed with fur is brought near a small feather?
[Amber is a kind of resin. It attracts the feather]

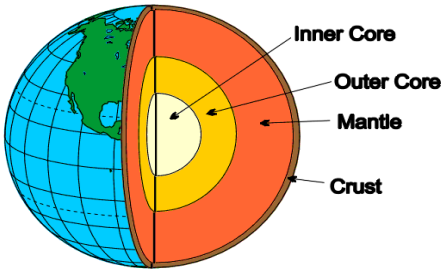
c) When a charged glass rod is brought near a charged plastic straw (rubbed with polythene), there is an attraction between the two. What is the nature of the charge on the plastic straw?
[Negative]

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 the sweater and shirt produces opposite electric charges on them. The discharge of these electric charges produces a crackling sound.]

4. State the difference between electric current and static electricity. [The most significant difference between 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 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. a)Draw a neat and labelled diagram to show the structure of the earth.



b) What are tectonic plates? [The earth's lithosphere (crust and some parts of the upper mantle) is fragmented into many large and small pieces of stabs or plates of rocks called tectonic plates. These plates are in continuous motion.]

c) What is the 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.]

III. SHORT ANSWER TYPE QUESTIONS: (3M)

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. a) Which are the two kinds of electric charges? Mention the interaction of two types of charges. [Positive and negative charges. Like charges repel each other, unlike charges attract each other]

b) 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.]

c) Explain how lightning takes 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 the 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 an accumulation of positive charges near the ground. When the magnitude of the accumulated

charges becomes 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. a) 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.]

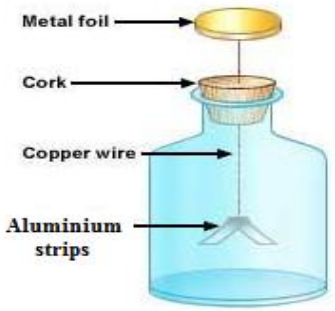
b) What is a seismograph? [Tremors or vibrations caused by earthquakes which travel in the form of waves within the earth or along the earth's surface, are called seismic waves. A seismograph is an instrument which records these waves.]

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 objects get charged by friction (but with opposite charges). For example, when a glass rod is rubbed with a silk cloth, then both the glass rod and silk cloth get charged. Both glass rods and silk cloth can attract tiny bits of paper. The electric charges acquired by glass rods and silk cloth are, however opposite in nature. As a convention, the electric charge acquired by the glass rod (rubbed with silk) is called a 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.*** Take shelter under a table and stay, there still 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.*** 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.]

IV. LONG ANSWER TYPE QUESTIONS (5 M):

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



a. What will you observe when the metal cap of an electroscope is touched with a charged object? Give a reason for your answer. [As like charges repel, strips will diverge as aluminium strips receive the same charge as that of the charged object.]

b. 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 meant by earthing? What is the purpose of providing earthing in the buildings?
[The process of transferring charges from a charged body to the earth is called earthing. 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 an electrical circuit.]

d. State the principle on which the 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, and open cars are not safe. Open fields, tall trees, shelters in parks, and elevated places do not protect us from lightning strikes. Carrying an 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 would strike the building? Will the lightning conductor be still required to be installed in the building? [No, there is no need to install lightning conductors 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 balloons will receive the same charge on rubbing with woollen cloth]

V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS:

1. 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. A 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?

They should stop swimming and go inside a building.

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

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

iii. Identify the correct statement/statements related to lightning and thunderstorms.

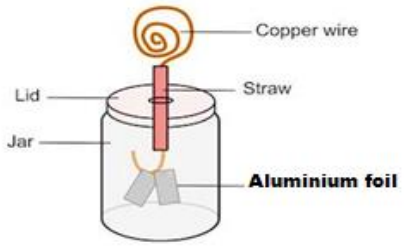
a. Lightning is an electric discharge that occurs in nature on a large scale.

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

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

Both a and b

2. Seetha prepared an electroscope as shown in the figure. She has replaced the copper wire with an ebonite rod. When the 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 the ebonite rod is an insulator. As a result, there will be no charge on the aluminium strips.]

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