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PRACTICE PAPER 12 (2024-25)

CHAPTER 12 SOME NATURAL PHENOMENA

(ANSWERS)

SUBJECT: SCIENCE **MAX. MARKS : 40**

CLASS : VIII **DURATION : 1½ hr**

SECTION – A

Questions 1 to 6 carry 1 mark each.

1. Two charged objects are brought close to each other. Choose the most appropriate statement from the following options:
(a) they may attract
(b) they may repel
(c) they may attract or repel depending on the type of charges they carry
(d) there will be no effect
Ans. (c) they may attract or repel depending on the type of charges they carry
If the charges are like charges they repel each other and if the charges are unlike charges they attract each other.

2. When a glass rod is rubbed with a piece of silk cloth, the rod
(a) and the cloth both acquire a positive charge.
(b) becomes positively charged while the cloth has a negative charge.
(c) and the cloth both acquire a negative charge.
(d) becomes negatively charged while the cloth has a positive charge.
Ans. (b) becomes positively charged while the cloth has a negative charge.
When two objects are rubbed against each other, they acquire opposite charges. By the law of convention, it is known that the rod acquires the positive charge, and the cloth acquires the negative charge.

3. Consider the list of terms given below
(i) Tsunami
(ii) Landslide
(iii) Floods
(iv) Lightning
Earthquakes can cause
(a) (i), (ii) & (iii) (b) (ii) & (iv) (c) (ii), (iii) & (iv) (d) (iii) & (iv)
Ans. (a) (i), (ii) & (iii)

4. The outermost layer of earth is called
(a) mantle (b) outer core (c) crust (d) inner core
Ans. (c) crust
Earths top layer is called crust which is followed by mantle, outer core and inner core.

5. Consider the list of terms given below:
(i) Seismic Zone
(ii) Fault Zone
(iii) Mantle
(iv) Inner Core
The boundaries of the earth's plate are known as
(a) (i) & (ii) (b) (i) & (iii) (c) (iii) & (iv) (d) (ii), (iii) & (iv)

Ans. (a) (i) & (ii)
An earthquake is a sudden shaking or trembling of the earth which lasts for a very short time. Earthquakes are caused due to the movement of plates. Boundaries of the plates are weak zones where earthquakes are most likely to occur.

6. In the below question, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as
Assertion (A): Lightning conductor is a device used to protect buildings from lightning.
Reason (R): Lightning strikes could destroy life and property.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.
Ans. (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)
Lightning conductor is a device used to protect buildings from lightning. It does not allow the charge to accumulate on a building. It transfers all the charges to the earth, protecting the building from being struck by lightning. Lightning strikes could destroy life and property.

SECTION – B

Questions 7 to 10 carry 2 marks each.

7. What are the causes of sparking?
Ans. Causes of sparking:
(i) On electric pole wires become loose.
(ii) Blowing of wind and shaking the wires.
(iii) Looseness of plug in its socket.

8. Explain why a charged body loses its charge if we touch it with our hand.
Ans. When we touch a charged body, it loses its charge, due to the process of earthing. Our body is a good conductor of electricity. It transfers the charges to the earth.

9. How many different types of charges are there? Write the nature of charges on glass rod and silk cloth when they are rubbed each other?
Ans. There are two types of charges: (i) Positive charge and (ii) Negative charge.
Charge acquired by a glass rod rubbed with silk is called positive charge and the charge acquired by silk cloth is called negative charge.

10. What is static electricity? How is it different from electric current?
Ans. The electrical charges generated by rubbing produce static electricity. The charges do not move in static electricity while charges move in current electricity.

SECTION – C

Questions 11 to 14 carry 3 marks each.

11. What is lightning conductor? How does it protect building from lightning?
Ans. Lightning conductor is a device used to protect building from the effect of lightning. A metallic rod taller than the building is 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. The rod provides easy route for transfer of electric charge to the ground.

12. Define earthing. What is the main purpose of providing earthing in buildings?
Ans. The process of transfer of charge from a charged object to earth is called earthing. For our safety, most of the electrical appliances and the mains of the house are connected to earth, so that we can be prevented from getting an electric shock.

13. What are fault zones? Name the fault zones in India.
Ans. The areas fall between the boundaries of two plates are called weak zones or seismic or fault zones. In india the most threatened areas are Kashmir, Western and Central Himalayas, whole of North- East, Rann of Kutch, Rajasthan, Indo- Gangetic plain and some areas of south India.

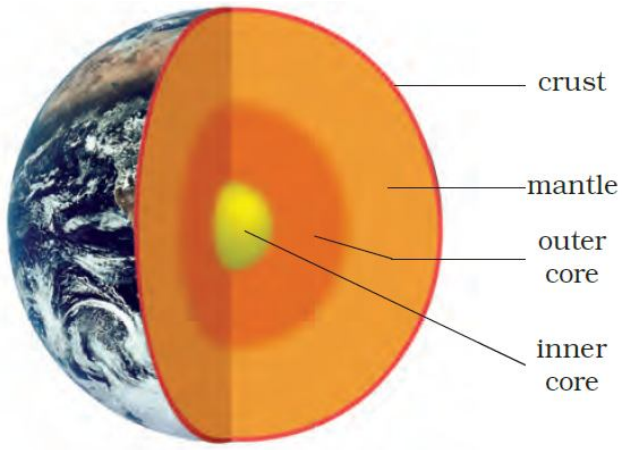
OR

Name the scale on which the destructive energy of an earthquake is measured. An earthquake measures 3 on this scale. Would it be recorded by a seismograph? Is it likely to cause much damage?
Ans. Richter scale is used to measure the destructive energy of an earthquake. The scale has a reading from 1 to 10.
An earthquake measuring 3 would be recorded by a seismograph.
The magnitude of scale 3 would not cause much damage. An earthquake of magnitude 5 is considered destructive in nature.

14. Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon.
Ans. A charged balloon is repelled by another charged balloon because both the balloons contain same type of charges. We know that like charges repel each other. A balloon is charged while other is uncharged so they have no same charge. Therefore, charged balloon attracts uncharged balloon.

OR

Draw a labelled diagram of the structure of earth.
Ans.

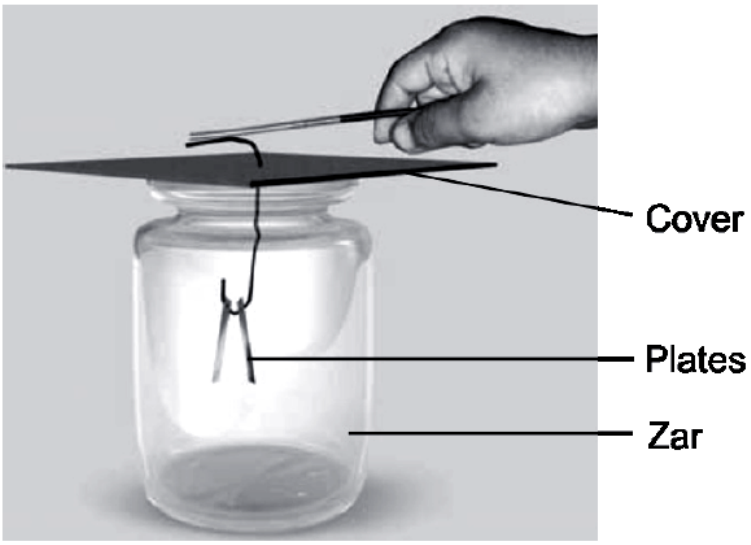


SECTION – D

Questions 15 to 16 carry 5 marks each.

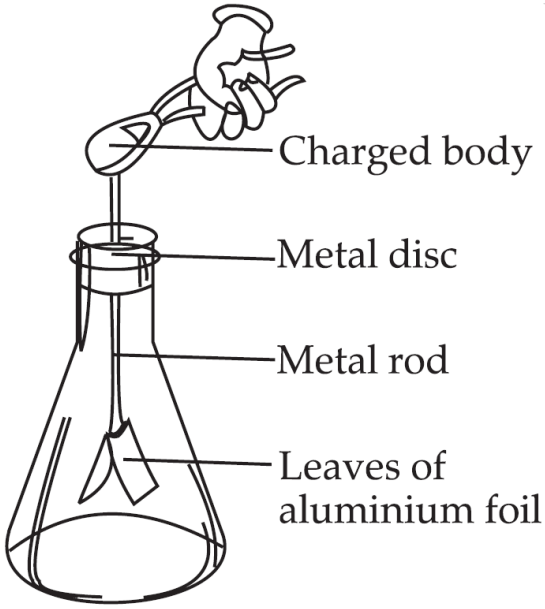
15. Explain the construction and working of electroscope.
Ans. The device which is used to test whether an object is carrying charge or not is called electroscope.

Construction and working: An electroscope has a metal rod with thin metal strips or leaf attached to it at the bottom. At the top, the rod enters in a cup. The bottom part of the rod and leaf are enclosed in a glass bottle for protection. When the knob of the electroscope is touched with a charged ebonite or glass rod, the leaves open out or diverge. Extent of divergence depends upon the amount of charge on the electroscope.



OR

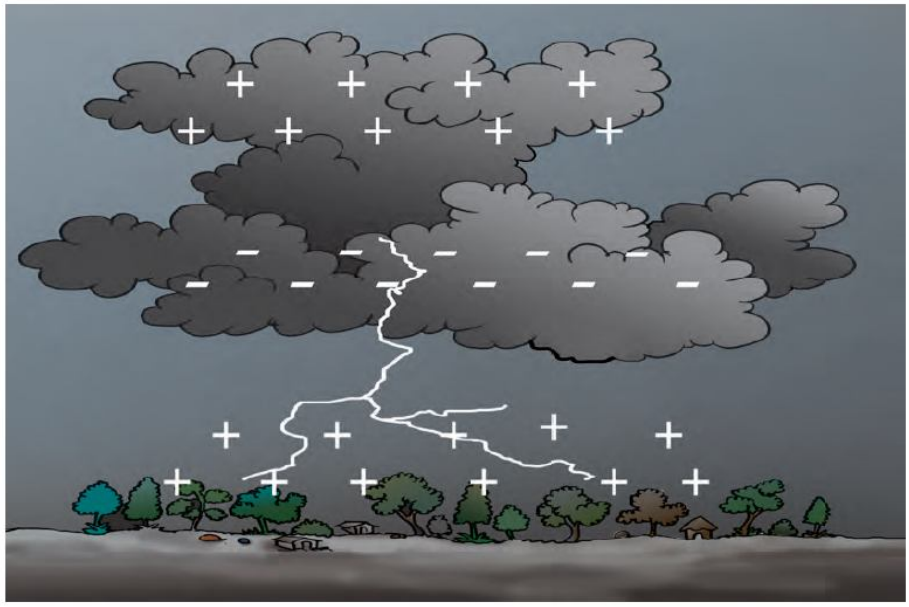
Describe with the help of a diagram an instrument which can be used to detect a charged body.
Ans. An electroscope is used to detect whether a body is charged or not. It consists of a metal rod on which two leaves of aluminium foil are fixed to one end and a metal disc at the other end. The leaves are placed inside a conical flask, and it is corked to isolate them from the atmospheric air.



When a charged body comes in contact with the metal disc, the aluminium leaves move away from each other because some charges get transferred to aluminium leaves through the metal rod. This process is called charging by conduction. The charges on the leaves and the charged body are of the same nature, and thus, the leaves of aluminium repel each other. If the body is not charged then they would attract each other.

16. Explain the mechanism of thunderstorms.
Ans. During the development of a thunderstorm, the air currents move upward while the water drops move downward. These movements cause separation of charges. The positive charges collect near the upper edges of the clouds and negative charges accumulate near the lower

edges. There is accumulation of positive charges near the ground also. When the amount of accumulated charges becomes very large, the air which is normally a poor conductor of electricity, is no longer able to resist their flow. Negative and positive charges meet, producing streaks of bright light and sound. This process is called an electric discharge.
The process of electric discharge can occur between two or more clouds or between clouds and the earth. In this way thunderstorm is caused.



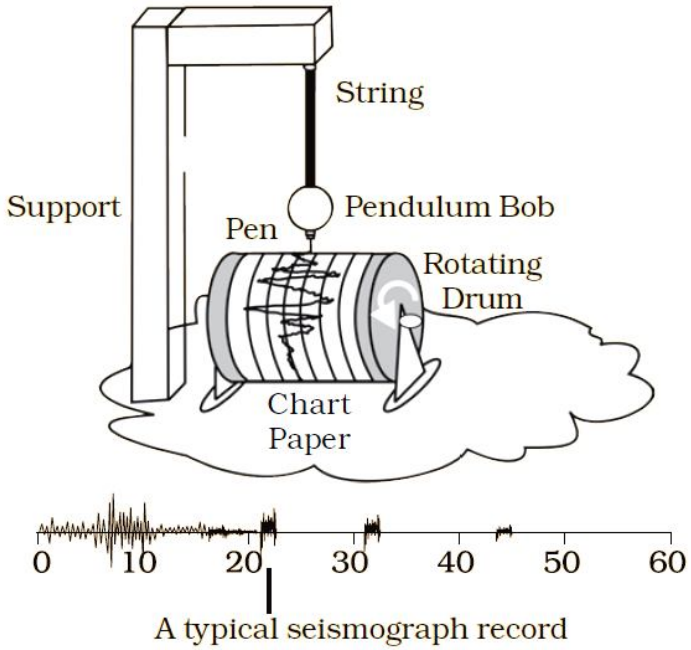
OR

How can you save yourself from lightning?
Ans. Some safety measures are:
(i) We should run to take shelter in the house.
(ii) We should remain in the covered area.
(iii) We should not sit in open, on scooters or bike etc.
(iv) We should take shelter under a small tree while in open.
(v) If there is no tree or other shelter we should sit with head folded.
(vi) We should plug out all the electrical appliances during lightning.
(vii) We should not use wired telephones during lightning. Mobiles and cordless phones are safe.

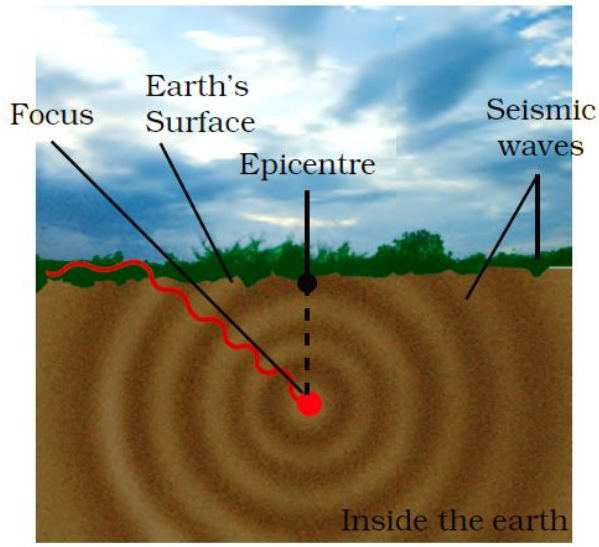
SECTION – E (Case Study Based Question)

Question 17 carry 4 mark

17. The weather department can warn about a thunderstorm developing in some area. There is, however, one natural phenomenon which we are not yet able to predict accurately. It is an earthquake. It can cause damage to human life and property on a huge scale.
An earthquake is a sudden shaking or trembling of the earth which lasts 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. Earthquakes can cause floods, landslides and tsunamis. A major tsunami occurred in the Indian Ocean on 26 December 2004. All the coastal areas around the ocean suffered huge losses.



A typical seismograph record



Map of the earthquake

The power of an earthquake is expressed in terms of a magnitude on a scale called the Richter scale. The tremors produce waves on the surface of the earth. These are called seismic waves. The waves are recorded by an instrument called the seismograph. The instrument is simply a vibrating rod, or a pendulum, which starts vibrating when tremors occur.

(a) What do you mean by seismic waves? (1)

(b) What is seismograph and how it function? (1)

(c) What is the cause of earthquake? (1)

(d) What is tsunami and when it occurred? (1)

Ans. (a) The tremors produce waves on the surface of the earth. These waves are called seismic waves.

(b) Seismograph is an instrument which simply consists of a vibrating rod or a pendulum which starts vibrating when tremors occur. It is used to record seismic waves.

(c) Earthquake is caused by a disturbance deep inside the earth's crust. It occurs all the time, all over the earth.

(d) A tsunami is a kind of earthquake which occurs in ocean and causes huge damage in terms of life and property. A major tsunami occurred in the Indian Ocean on 26 December 2004.