Some Natural Phenomena

Very Short Answer Type Questions

Q.1. What are the two kinds of electric charges?

Answer: There are two types of charges: Positive charge and negative charge. Like charges repel each other and unlike charges attract each other.

Q.2. What kind of electric charge is acquired?

(a) by a glass rod rubbed with silk cloth?

(b) by a plastic comb rubbed with dry hair?

Answer: (a) After rubbing the glass rod with silk cloth, the glass rod becomes positively charged. The silk cloth becomes negatively charged.

(b) The plastic comb acquires negative charge when it is rubbed with dry hair.

Q.3. What type of electric charge is acquired by a rubber balloon when rubbed with a woolen cloth?

Answer: The rubber balloon becomes negatively charged when rubbed with a woolen cloth.

Q.4. A negatively charged object attracts another charged object placed near it. What is the nature of charge on the other object?

Answer: The nature of charge on the other object will be positive. This is because like charges repel each other and unlike charges attract each other.

Q.5. A positively charged object repels another charged object kept close to it. What is the nature of charge on the other object?

Answer: The nature of charge on the other object will be positive. This is because like charges repel each other and unlike charges attract each other.

Q.6. A negatively charged object repels another charged object held near it. What is the nature of charge on the other object?

Answer: The nature of charge on the other object is negative. This is because like charges repel each other and unlike charges attract each other.

Q.7. A glass rod is rubbed with a silk cloth. What type of charge is acquired by

(a) silk cloth, (b) glass rod?

Answer: After rubbing the glass rod with silk cloth, the glass rod becomes positively charged. The silk cloth becomes negatively charged.

Q.8. An inflated rubber balloon and a woollen cloth are rubbed together. What type of charge is acquired by?

(a) woollen cloth, and (b) rubber balloon?

Answer: The rubber balloon becomes negatively charged when rubbed with a woolen cloth. The woolen cloth acquires a positive charge.

Q.9. Name the device to detect electric charge on a body.

Answer: Electroscope is the device which is used to detect charge on a body. It is used for detecting, measuring and finding the nature of a charge.

Q.10. When an object is touched with the metal top of an electroscope, its aluminium leaves diverge. What conclusion do you get from this observation?

Answer: If the leaves of the electroscope diverge or open up when an object is touched, the body is charged. The extent of divergence or opening up of the leaves is a measure of the charge on the body. A body with higher charge will cause greater opening up of the leaves.

Q.11. What name is given to the flash of light which occurs in the sky during the rainy season?

Answer: Lightening is the name given to the flash of light which occurs in the sky during the rainy season. The process of electric discharge between clouds and the earth or between different clouds causes lightning.

Q.12. Why should a person not stand under a tree during a thunderstorm?

Answer: Trees are usually the tallest objects around and have many pointy tips. The electric field is strong near the pointed tips. The current from a lightening may leave the tree and jump over to the person standing near the tree. The current will then follow from the body of the person on its way to the ground.

Q.13. Name the scientist who showed that lightning is electric in nature.

Answer: Benjamin Franklin is the scientist who showed that lightening is electric in nature. He discovered many things about lightening and was the first to show that a thunderstorm lets out electricity.

Q.14. Name the device which is used to protect a tall building from lightning.

Answer: Lightening conductor is a device which is used to protect a tall building from lightening. A metallic rod, taller than the building, is installed in the walls of the building during its construction.

Q.15. What name is given to the phenomenon in which the earth shakes suddenly for a very short time?

Answer: Earthquake is the phenomenon in which the earth shakes suddenly for a very short time. It is caused by a disturbance deep inside the earth's crust.

Q.16. Name one destructive natural phenomenon which cannot be predicted in advance.

Answer: Earthquake is the destructive natural phenomenon which cannot be predicted in advance. The earthquakes can cause floods, landslides and tsunamis. Most earthquakes are caused by the movement of earth's plates.

Q.17. List three states in India where earthquakes are more likely to occur.

Answer: The states in India where earthquakes are most likely to occur are Kashmir, Western and Central Himalayas, the whole of North-East, Rann of Kutch, Rajasthan and the Indo – Gangetic Plane.

Q.18. Name the instrument used to measure and record an earthquake.

Answer: Seismograph is the instrument which is used to measure and record an earthquake. The tremors produce waves on the surface of the earth. These are called seismic waves. These waves are recorded by the seismograph.

Q.19. What was the magnitude of Bhuj and Kashmir earthquakes on the Richter Scale?

Answer: The magnitude of Bhuj and Kashmir earthquakes on the Richter Scale were more than 7.5 The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

Q.20. Name the scale on which the magnitude (or intensity) of an earthquake is expressed.

Answer: There are a number of ways to measure the magnitude of an earthquake. But, the Richter magnitude scale (often shortened to Richter scale) is the most common standard of measurement for earthquakes.

The Richter scale is used to rate the magnitude of an earthquake, that is the amount of energy released during an earthquake.

Richter Magnitude	Earthquake effects
0-2	Not felt by people
2-3	Felt little by people
3-4	Ceiling lights swing
4-5	Walls crack
5-6	Furniture moves
6-7	Some buildings collapse
7-8	Many buildings destroyed
8-Up	Total destruction of buildings, bridges and roads

Q.21. For what purpose is Richter Scale used?

Answer: The Richter scale is used to measure the magnitude (or intensity) of an earthquake. It measures the power of an earthquake. The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

Q.21. For what purpose is Richter Scale used?

Answer: The Richter scale is used to measure the magnitude (or intensity) of an earthquake. It measures the power of an earthquake. The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

Q.22. Name two events (other than earthquakes) which can cause tremors on the earth.

Answer: The tremors on the earth can be caused when a volcano erupts or when a meteor hits the earth. It can also be caused by an underground nuclear explosion.

Q.23. In the context of an earthquake, which one is deep under the ground: focus or epicentre?

Answer: Focus of an earthquake is located deep under the ground. Focus is the point inside the crust where the pressure is released. The point on the earth's surface above the focus is called the epicenter.

Q.24. State whether the following statements are true or false:

(a) Like charges attract each other.

(b) A charged glass rod attracts a charged plastic straw.

(c) Lightning conductor cannot protect a building from lightning.

(d) Earthquakes can be predicted in advance.

(e) An earthquake of magnitude 2 on Richter Scale is ten times as strong as an earthquake of magnitude 1 on the same Scale.

(f) The plates of earth's crust are continuously moving.

(g) An earthquake is measured and recorded by using an instrument called electrocardiograph.

Answer: (a) This statement is False.

Like charges repel each other and unlike charges attract each other.

(b) This statement is True.

A charged glass rod has positive charge on its surface and a charged plastic straw has negative charge on its surface. The charges are opposite in nature and hence, they attract each other.

(c) This statement is False.

Lightening conductor is a device which is used to protect a tall building from lightening. A metallic rod, taller than the building, is installed in the walls of the building during its construction.

(d) This statement is False.

An earthquake is a sudden shaking or trembling of the earth. It is caused by a disturbance deep inside the earth’s crust. It is not possible to predict the occurrence of an earthquake.

(e) This statement is True.

The Richter scale is used to measure the magnitude (or intensity) of an earthquake. It measures the power of an earthquake. The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

(f) This statement is True.

The outermost layer of the earth 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 that shows up as an earthquake on the surface of the earth.

(g) This statement is False.

Seismograph is the instrument which is used to measure and record an earthquake. The tremors produce waves on the surface of the earth. These are called seismic waves. These waves are recorded by the seismograph.

Q.25. Fill in the following blanks with suitable words:

(a) Like charges.....; unlike charges.....

(b) Rubbing glass with silk makes a.....charge on the glass.

(c) Combing your hair makes a.....charge on the comb.

(d) The negatively charged particles which are transferred from one object to another during charging by friction are called.....

(e) The charging of an object by rubbing it with another object is called charging by.....

(f) In an electroscope, the aluminium leaves diverge because like charges.....

(g) .....is provided in buildings to protect us from electric shocks due to any leakage of electric current.

(h) Lightning is nothing but an.....spark.

(i) Each fragment of earth's crust is called a.....

Answer:

(a) The correct answer is …. repel and …. attract.

There are two types of charges: Positive charge and negative charge. Like charges repel each other and unlike charges attract each other.

(b) The correct answer is ……positive.

After rubbing the glass rod with silk cloth, the glass rod becomes positively charged. The silk cloth becomes negatively charged.

(c) The correct answer is …. negative.

The combing of hair make the comb negatively charged. It is able to attract tiny pieces of paper which are neutral.

(d) The correct answer is …. electrons.

For example, when a glass rod is rubbed with silk, some of the electrons from the glass atoms are transferred to silk. Due to the deficiency of electrons in the glass atoms, it becomes positively charged. Whereas the silk has acquired electrons, it becomes negatively charged.

(e) The correct answer is …. friction.

The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object.

(f) The correct answer is … repel.

The aluminium foil strips receive the same charge from the charged objects. The strips carrying similar charges repel each other and they become wide open.

(g) The correct answer is …... Earthing.

The process of transferring of charge from a charged object to the earth is called earthing.

(h) The correct answer is …... electric.

Lightening is the name given to the flash of light which occurs in the sky during the rainy season. The process of electric discharge between clouds and the earth or between different clouds causes lightning.

(i) The correct answer is …. Plate.

The outermost layer of the earth is fragmented. Each fragment is called a plate. These plates are in continual motion.

Short Answer Type Questions

Q.26. Why does a plastic comb rubbed with dry hair attract tiny pieces of paper?

Answer: The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object. When a plastic comb is dry hair, it becomes negatively charged. The negatively charged comb induces a positive charge on the pieces of paper which are neutral in nature. As we know that the unlike charges attract each other, plastic comb attracts tiny pieces of paper.

Q.27. How will you charge a glass rod by the method of friction?

Answer: The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object. A glass rod can be charged by rubbing it with silk cloth. When a glass rod is rubbed with silk, some of the electrons from the glass atoms are transferred to silk. Due to the deficiency of electrons in the glass atoms, it becomes positively charged. Whereas the silk has acquired electrons, it becomes negatively charged.

Q.28. How will you charge an inflated rubber balloon by the method of friction?

Answer: An inflated balloon can be charged by rubbing it against the woolen cloth.

Explanation: Upon rubbing, the wool loses electrons and it causes the electrons to move from the wool to the balloon’s surface. The rubbed part of the balloon now has a negative charge.

Q.29. How will you charge a plastic comb (plastic scale or plastic pen) by the method of friction?

Answer: The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object. A plastic comb can be charged by rubbing. The plastic comb will carry a negative charge.

Q.30. How will you charge a ballpoint pen refill by the method of friction?

Answer: A ballpoint pen refill can be charged by rubbing it against the wool cloth. It becomes negatively charged. When we bring it close to bits of paper, the paper gets attracted to it. Paper is electrically neutral. The negative charge on the pen induces a positive charge on the paper bits which are close to it that causes the paper to fly and stick to the pen.

Q.31. What will you observe when the metal top of an electroscope is touched with a glass rod which has been rubbed with silk cloth? Give reason for your answer.

Answer: When a glass rod is rubbed with a silk cloth, it acquires positive charge. When it is touched with the metal top of an electroscope, both the metal top and leaves acquires a positive charge due to conduction. As a result of the positive charge on both the leaves, the divergence of leaves takes place.

Q.32. What will you observe when the metal top of an electroscope is touched with a plastic comb rubbed in dry hair? Give reason for your answer.

Answer: After rubbing the plastic comb, it acquires negative charge. When it is touched with the metal cap of an electroscope, both the metal cap and the leaves acquire negative charge due to conduction. As a result of negative charge on both the leaves, divergence of leaves takes place.

Q.33. What happens when we touch the metal top of a charged electroscope with our finger? What is this process known as?

Answer: The leaves of an electroscope will collapse when we touch the metal cap with our hand. This is because the leaves of the charged electroscope lose charge to the earth or gets discharged through our body. This process is called Earthing. The process of transfer of charge from a charged body to the earth is called Earthing.

Q.34. Explain why, a charged body loses its charge when we touch it with our hand.

Answer: A charged body loses its charge or gets discharged when we touch it with our hand. This process is called Earthing. The process of transfer of charge from a charged body to the earth is called Earthing.

Q.35. What happens when the two plates of earth's crust moving in opposite directions slide past one another?

Answer: The outermost layer of the earth 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. This disturbance in the earth's crust shows up as an earthquake on the surface of the earth.

Q.36. What happens when two moving plates of earth's crust collide head on with each other?

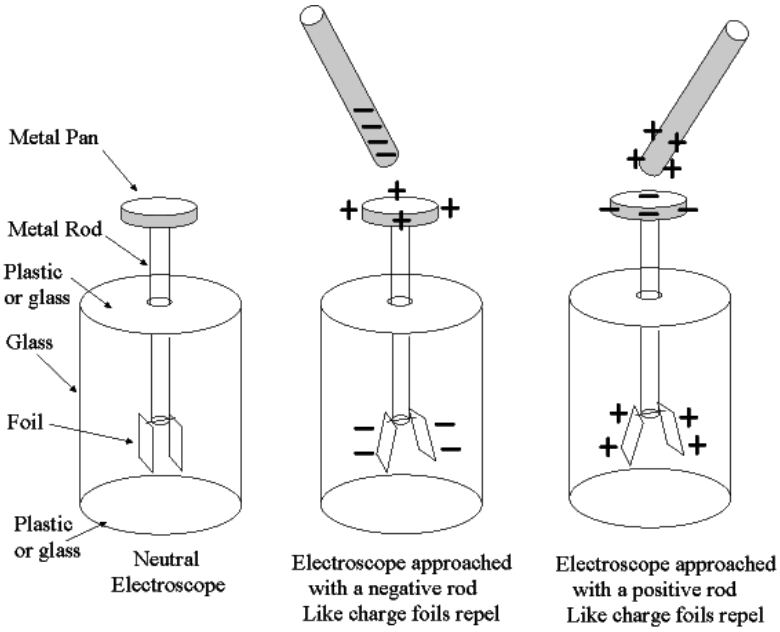
Answer: The outermost layer of the earth is fragmented. Each fragment is called a plate. These plates are in continual motion. When two plates collide head on, they push each other up and form mountains. The Himalayas and other great mountain ranges were created by this process.

Q.37. How will you find out whether an object is charged or not?

Answer: In order to find out if an object is charged or not, we can test it by using an electroscope.

1) When the object is touched with the metal cap of an electroscope, both the metal cap and the leaves acquire the charge due to conduction. As a result of

2) As a result of both, the leaves of the electroscope will have the same charge. It will cause the leaves to diverge showing that the object was charged, as shown in the pic:



Q.38. Explain why, it might be dangerous to raise an umbrella over our head in a thunderstorm.

Answer: It is not safe to carry an umbrella during thunderstorm. Umbrellas are made up of metals. Thunderstorms are accompanied with lightening. The electric discharge from the clouds can travel through the metal rod of the umbrella. It can result into the electric

discharge to the person carrying it. Hence, it might be dangerous to carry an umbrella during thunderstorm.

Q.39. A person is in open space during a thunderstorm with no shelter (not even a tree) available nearby. Describe the safe position which he should take to protect himself from lightning. Why is this position considered safe?

Answer: If there is no shelter available, we must stay away from all trees, poles or other metal objects. We must not lie on the ground but we should squat low on the ground. Hands must be placed on the knees and the head should be between the hands. This position will make us the smallest target to be struck.

Q.40. Suggest three measures to protect ourselves from lightning.

Answer: We must protect ourselves from lightening in the following ways:

● We must find a safe place to stay. A house or building are safe to stay in. If we are in a car or a bus, we must keep the windows and doors of the vehicle shut.

● If there is no shelter available, we must remain in the squat position.

● We must avoid the use of telephone cords, electrical wires and metal pipes.

● Bathing should be avoided during thunderstorms to avoid contact with running water.

● Electrical appliances like computers, TVs, etc., should be unplugged.

Q.41. Explain why, sometimes when we take off the woollen sweater or a polyester shirt in a dark room, we can see tiny sparks of light and hear a crackling sound.

Answer: We can see tiny sparks of light and hear a crackling sound when we take off the woolen sweater or a polyester shirt. It happens because the sweater or a polyester shirt gets charged due to friction between the sweater and the body.

Q.42.A. Name the material of which a lightning conductor is made.

Answer: Lightening conductor is a device which is used to protect a tall building from lightening. Lightening conductor is made up of metal which is a good conductor of electricity.

Q.42.B. What is the shape of the top end of a lightning conductor?

Answer: The lightening conductor is made of metal rod with a sharp pointed edge on the top. They are made of conductive material such as copper and aluminium. Copper and its alloys are the most common materials used in lightening conductors.

Q.42.C. Where is the upper end of the lightning conductor fixed in a building?

Answer. A metallic rod which is 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

end is buried deep in the ground. The rod provides easy route for the transfer of electric charge to the ground.

Q.42.D. Where is the lower end of the lightning conductor fixed and how?

Answer: A metallic rod, taller than the building, is installed in the walls of the building during its construction. The lower end of the rod is buried deep in the ground and the upper end is kept out in the air. The metallic rod transfers the electric charge to the ground.

Q.43. What precautions would you take to protect yourself during an earthquake if you are inside the house?

Answer: In order to protect ourselves during an earthquake we must protect ourselves in the following ways:

● We must take shelter under the table and should stay until the shaking stops.

● We must stay away from the heavy objects to avoid them to fall on us.

● If we are in bed we must stay in it and should protect our head with a pillow.

Q.44. What precautions would you take to protect yourself during an earthquake if you are outdoors?

Answer: We must take the following precautions for protection during an earthquake if we are outdoors:

● We must find a clear spot, away from the buildings, trees and overhead power lines. We must drop to the ground.

● While driving, we must remain inside the car or a bus. We must drive slowly to a clear spot. We must not come out of the car or a bus till the tremors stop.

Q.45. State any two precautions which should be observed by people living in seismic zones for protection against earthquakes.

Answer: People living in seismic zones should take the following measures for protection against earthquakes:

● The buildings in these zones should be designed so that they can withstand tremors. Modern building technology can make it possible.

● Mud and timber should be used as construction material instead of heavy construction material. The roofs should be kept as light as possible.

● The cupboards and shelves should be fixed to the walls so that they should not fall easily.

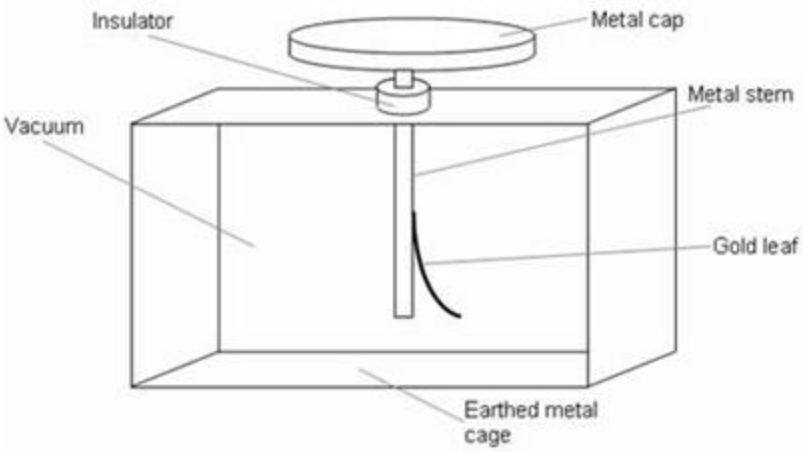
● Clocks, photo frames and water heaters etc. should be hanged carefully at proper places to avoid damage by them.

● Sometimes the buildings may catch fire during earthquakes. All the buildings, especially the tall buildings should have the firefighting equipment in working order.

Long Answer Type Questions

Q. 46. What is an electroscope? Draw a labelled diagram of an electroscope and explain its working.

Answer: Electroscope is the device which is used to detect charge on a body. It is used for detecting, measuring and finding the nature of a charge. An electroscope consists of a large jar. A metal rod is fitted into the mouth of the jar with the help of the cork. At the lower end of the metal rod a pair of thin leaves of gold or aluminium is suspended. If the leaves of the electroscope diverge or open up when an object is touched, the body is charged. The extent of divergence or opening up of the leaves is a measure of the charge on the body. A body with higher charge will cause greater opening up of the leaves.



Q.47.A. What is lightning? How is lightning produced between clouds in the sky?

Answer: The process of electric discharge between clouds and the earth or between different clouds causes lightning. During the development of a thunderstorm, the water droplets move downwards while the air currents move upward. Due to these strong movements, the separation of charges takes place. The positive charges collect near the upper edges of the clouds and the negative charges collect near the lower edges. There is accumulation of positive charges near the ground as well. When the magnitude of the 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. We are able to see these streaks as lightening. The process is called an electric discharge.

Q.47.B. Why does lightning usually strike tall buildings?

Answer: Lightning strike could destroy life and property. Lightning conductors can protect buildings from the effects of lightning. Lightning strikes the tall buildings and can result in fire.

Q.47.C. What damage can be done when lightning strikes on the earth?

Answer: Lightening can result in electric shocks, damage to the buildings and fire. The electric discharge from the clouds can travel through the metal objects and can result into the electric discharge to the person carrying it.

Q.48.A. How does a lightning conductor protect a tall building? Name the scientist who invented the lightning conductor.

Answer: Lightening conductor is a device which is used to protect a tall building from lightening. Lightening conductor is made up of metal which is a good conductor of electricity. The lightening conductor is made of metal rod with a sharp pointed edge on the top. They are made of conductive material such as copper and aluminium. A metallic rod which is 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 end is buried deep in the ground. The rod provides easy route for the transfer of electric charge to the ground. Lightening conductor was discovered by Benjamin Franklin.

Q.48.B. Why are lightning strikes more frequent in hilly areas?

Answer: Hills are above the sea levels and are nearer to the sky. The clouds are closer to the hills as compared to the grounds. As a result, the lightening can strike much easily and frequently in hilly areas.

Q.49.A. What is an earthquake? What are the two main situations in which earthquakes occur?

Answer: Earthquake is the phenomenon in which the earth shakes suddenly for a very short time. It is caused by a disturbance deep inside the earth's crust. It is the destructive natural phenomenon which cannot be predicted in advance. The earthquakes can cause floods, landslides and tsunamis. Most earthquakes are caused by the movement of earth's plates. The magnitude (or intensity) of an earthquake is expressed in terms of Richter scale. The destructive earthquakes have magnitudes higher than 7 on the Richter scale. The outermost layer of the earth 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 that shows up as an earthquake on the surface of the earth. The tremors on the earth can be caused when a volcano erupts or when a meteor hits the earth. It can also be caused by an underground nuclear explosion.

Q.49.B. Define:

(i) focus, and (ii) epicentre, of an earthquake.

Answer: Focus of an earthquake is located deep under the ground. Focus is the point inside the crust where the pressure is released. The point on the earth's surface above the focus is called the epicenter.

Q.49.C. What are the various effects of an earthquake?

Answer: The various effects of earthquakes are following:

● Earthquakes 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.

Q.50.A. Name the three layers of earth. Draw a labelled diagram to show the structure of earth.

Answer: The Earth consists of four concentric layers: The inner core, outer core, mantle and the crust. The crust is made up of tectonic plates which are in constant motion. Earthquakes and volcanoes are most likely to occur at plate boundaries.

The Earth is made up of following distinct layers:

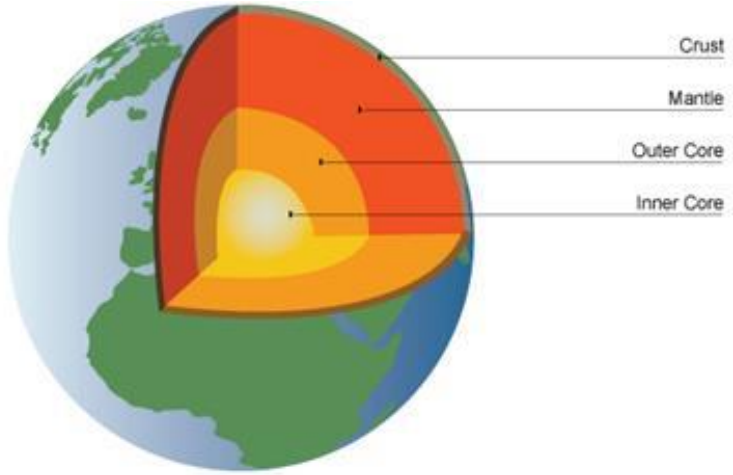
1. The inner core: It is in the center of the Earth. It is the hottest part of the Earth. It is solid and is made up of iron and nickel. It has a temperature of up to 5,500°C.

2. The outer core: It is the layer surrounding the inner core. It is a liquid layer. It is also made up of iron and nickel. It is still extremely hot, with temperatures similar to the inner core.

3. The mantle: It is the widest section of the Earth. It has a thickness of approximately 2,900 km. The mantle is made up of semi-molten rock called magma.

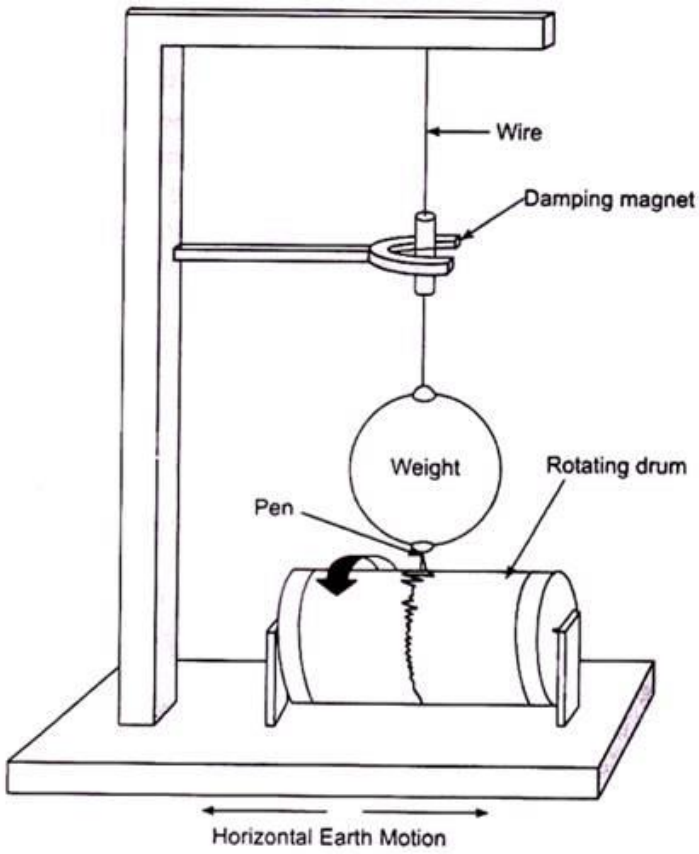
4. The crust: It is the outer layer of the earth. It is a thin layer between 0-60 km thick. The crust is the solid rock layer upon which we live.

There are two different types of crust: continental crust, which carries land, and oceanic crust, which carries water.



Q.50.B. What is a seismograph? Draw a labelled diagram of a seismograph.

Answer: Seismograph is the instrument which is used to measure and record an earthquake. The tremors produce waves on the surface of the earth. These are called seismic waves. These waves are recorded by the seismograph. Following is the well labelled diagram of a seismograph.



Multiple Choice Questions (MCQs)

Q.51. Which of the following cannot be charged by friction, if held by hand?

Answer: All of the above substances are insulators whereas Copper rod is a conductor. As soon as we charge a copper rod by rubbing with another material, the electric charge flow through our hand and body and flows into the earth. As a result, the copper rod remains un-charged.

Q.52. When a glass rod is rubbed with a piece of silk cloth, then:

Answer: After rubbing the glass rod with silk cloth, the glass rod becomes positively charged. The silk cloth becomes negatively charged. The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object.

Q.53. Which of the following are transferred from one object to another when these two objects are charged by friction?

Answer: The electric charges generated by rubbing are static electric charges. There are two types of charges: Positive charge and negative charge.

Q.54. The electric nature of lightning was established by a scientist named:

Answer: Benjamin Franklin is the scientist who showed that lightening is electric in nature. He discovered many things about lightening and was the first to show that a thunderstorm lets out electricity.

Q.55. A plastic comb is rubbed with dry hair whereas a glass rod is rubbed with a piece of silk cloth. Which of these will get negatively charged?

A) Plastic comb B) Glass rod C) Dry hair D) Silk cloth

Answer: After rubbing the glass rod with silk cloth, the glass rod becomes positively charged. The silk cloth becomes negatively charged. When a plastic comb is dry hair, it becomes negatively charged. The negatively charged comb induces a positive charge on the pieces of paper which are neutral in nature.

Q.56. The magnitude of an earthquake is measured on:

Answer: The magnitude (or intensity) of an earthquake is expressed in terms of Richter scale. The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

Q.57. An earthquake of magnitude 2 on Richter scale is:

Answer: The magnitude (or intensity) of an earthquake is expressed in terms of Richter scale. The destructive earthquakes have magnitudes higher than 7 on the Richter scale.

Q.58. The epicentre of an earthquake is:

Answer: Focus of an earthquake is located deep under the ground. Focus is the point inside the crust where the pressure is released. The point on the earth's surface above the focus is called the epicenter.

Q.59. The waves generated by the earthquake tremors are called:

Answer: The tremors produce waves on the surface of the earth. These are called seismic waves. These waves are recorded by the seismograph.

Q.60. When an object gets negatively charged by the process of friction, then:

Answer: The electric charges generated by rubbing are static electric charges. There are two types of charges: Positive charge and negative charge.

Q.61. The device used for detecting charge (positive or negative) on an object is called:

Answer: Electroscope is the device which is used to detect charge on a body. It is used for detecting, measuring and finding the nature of a charge.

Q.62. A charged object attracts an uncharged object by producing opposite charges in the nearer end of the uncharged object by the process of:

Answer: The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object.

Q.63. A lightning conductor is a device which transfers:

Answer: Lightening conductor is a device which is used to protect a tall building from lightening. A metallic rod, taller than the building, is installed in the walls of the building during its construction.

Q.64. When a plastic comb is rubbed with dry hair, the hair get positively charged by friction. In this process:

Answer: The combing of hair makes the comb negatively charged. It is able to attract tiny pieces of paper which are neutral.

Q.65. Which of the following part of the earth is made up of molten iron?

Answer: The outer core is the layer surrounding the inner core. It is a liquid layer. It is also made up of iron and nickel.

Q.66. Which of the following area of India is not the most threatened by earthquakes?

Answer: The states in India where earthquakes are most likely to occur are Kashmir, Western and Central Himalayas, the whole of North-East, Rann of Kutch, Rajasthan and the Indo – Gangetic Plane.

Q.67. The place inside the earth's crust where the earthquake is generated is called:

Answer: Focus of an earthquake is located deep under the ground. Focus is the point inside the crust where the pressure is released. The point on the earth's surface above the focus is called the epicenter.

Q.68. An inflated rubber balloon is rubbed with a woollen cloth whereas a ballpoint pen refill is rubbed with a polythene bag. Which of these will get positively charged?

A) Inflated rubber balloon **B) Woollen cloth**

C) Ballpoint pen refill **D) Polythene bag**

Answer: A ballpoint pen refill can be charged by rubbing it against the wool cloth. It becomes negatively charged.

Q.69. Lightning can even burn up a tree. Lightning contains a tremendous amount of:

Answer: Lightening is the name given to the flash of light which occurs in the sky during the rainy season. The process of electric discharge between clouds and the earth or between different clouds causes lightning.

Q.70. The tremendous electric charges in the atmosphere which produce sheet lightning in the clouds are produced by the process of:

Answer: The process of electric discharge between clouds and the earth or between different clouds causes lightning.

Questions Based on High Order Thinking Skills (HOTS)

Q.71. Explain why, a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by a charged balloon. (NCERT Book Question)

Answer: There are two types of charges: Positive charge and negative charge. Like charges repel each other and unlike charges attract each other. A charged balloon repels another charged balloon because like charges repel each other. A charged balloon attracts an uncharged balloon by the process of electric induction. The charged balloon produces opposite charges in the nearer end of the uncharged balloon.

Q.72. Explain why, a glass rod can be charged by rubbing when held by hand but an iron rod cannot be charged by rubbing, if held by hand.

Answer: The electric charges generated by rubbing are static electric charges. These electric charges remain bound on the surface of the charged object. When a glass rod is rubbed with silk, some of the electrons from the glass atoms are transferred to silk. Due

to the deficiency of electrons in the glass atoms, it becomes positively charged. Whereas the silk has acquired electrons, it becomes negatively charged. Iron rod is a conductor. As soon as we charge an iron rod by rubbing with another material, the electric charge flow through our hand and body and flows into the earth. As a result, the iron rod remains un-charged by rubbing, if held by hand.

Q.73. A glass rod is rubbed with a silk cloth and an inflated rubber balloon is rubbed with a woollen cloth. Now, out of glass rod, silk cloth, rubber balloon and woollen cloth:

(a) which two objects acquire negative charge?

(b) which two objects acquire positive charge?

Answer: (a) Silk cloth and Rubber balloon acquire negative charge. When a glass rod is rubbed with silk, some of the electrons from the glass atoms are transferred to silk. Due to the deficiency of electrons in the glass atoms, it becomes positively charged. Whereas the silk has acquired electrons, it becomes negatively charged. An inflated rubber balloon can be charged by rubbing it against the woolen cloth. Upon rubbing, the wool loses electrons and it causes the electrons to move from the wool to the balloon's surface. The rubbed part of the balloon now has a negative charge.

(b) Glass rod and Woolen cloth acquire positive charge. When a glass rod is rubbed with silk, some of the electrons from the glass atoms are transferred to silk. Due to the deficiency of electrons in the glass atoms, it becomes positively charged. An inflated rubber balloon can be charged by rubbing it against the woolen cloth. Upon rubbing, the wool loses electrons and it causes the electrons to move from the wool to the balloon's surface. The woolen cloth is left with a positive charge.

Q.74. What will you observe when the metal top of an electroscope is touched with:

(a) a positively charged object?

(b) a negatively charged object?

Answer: (a) When a glass rod is rubbed with a silk cloth, it acquires positive charge. When it is touched with the metal top of an electroscope, both the metal top and leaves acquires a positive charge due to conduction. As a result of the positive charge on both the leaves, the divergence of leaves takes place.

(b) After rubbing the plastic comb, it acquires negative charge. When it is touched with the metal cap of an electroscope, both the metal cap and the leaves acquire negative charge due to conduction. As a result of negative charge on both the leaves, divergence of leaves takes place.

Q.75. An earthquake measures 3 on Richter Scale:

(a) Would it be recorded by a seismograph?

(b) Is it likely to cause much damage?

Answer: (a) Earthquake is the phenomenon in which the earth shakes suddenly for a very short time. It is caused by a disturbance deep inside the earth's crust. Seismograph is the instrument which is used to measure and record an earthquake. The tremors produce waves on the surface of the earth. These are called seismic waves. These waves are recorded by the seismograph. Yes, an earthquake measuring 3 on Richter scale will be recorded by a seismograph.

(b) Earthquake is the destructive natural phenomenon which cannot be predicted in advance. The earthquakes can cause floods, landslides and tsunamis. Most earthquakes are caused by the movement of earth's plates. The magnitude (or intensity) of an earthquake is expressed in terms of Richter scale. The destructive earthquakes have magnitudes higher than 7 on the Richter scale. No, an earthquake which measures 3 on Richter scale is unlikely to cause much damage.