Lakhmir Singh Solutions For Class 8 Science Chapter 15 Some Natural Phenomena

1. What are the two kinds of electric charges?

Solution:

There are two types of electric charges: One is a positive electric charge and the other one is a negative electric charge.

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?

Solution:

(a) Glass rod acquires positive and silk cloth becomes negatively charged.

(b) Plastic comb acquires negative charge when rubbed with dry hair.

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

Solution:

The rubber balloon becomes negatively charged when rubbed with a woollen cloth.

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

Solution:

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

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

Solution:

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

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

Solution:

The nature of a charge on the other object is negative.

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

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

Solution:

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A glass rod when rubbed with a silk cloth, the rod becomes positively charged and silk cloth becomes negatively charged.

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?

Solution:

The rubber balloon becomes negatively charged when rubbed with a woollen cloth. The woollen cloth acquires a positive charge.

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

Solution:

The 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.

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?

Solution:

The body is charged when the leaves of the electroscope open up when an object is touched.it is the measure of the charge on the body.

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

Solution:

Lightening is the name given to the flashlight which occurs in the sky during the rainy season.

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

Solution:

A person should not stand under the tree as the lightening may leave the tree and comes over the person standing near and current will flow through the body.

13. Name the scientist who showed that lightning is electric.

Solution:

Benjamin Franklin is the scientist who showed that lightning is electric.

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

Solution:

The lightning conductor is a device which is used to protect a tall building from lightning.

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

Solution:

Earthquake is the phenomenon in which the earth shakes suddenly for a very short time.

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

Solution:

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Earthquake is the destructive natural phenomenon which cannot be predicted in advance. The earthquakes can cause floods, landslides and tsunamis.

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

Solutions:

The states in India where earthquakes are most likely to occur are Kashmir, Western and Central Himalayas.

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

Solutions:

A seismograph is an instrument which is used to measure and record an earthquake.

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

Solution:

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

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

Solution:

There are several ways to measure the magnitude of an earthquake. But, the Richter magnitude scale is the most common standard of measurement for earthquakes.

21. For what purpose is the Richter Scale used?

Solution:

The Richter scale is used to measure the magnitude (or intensity) of an earthquake. It measures the power of an earthquake.

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

Solution:

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.

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

Solution:

The focus of an earthquake is located deep under the ground. Focus is the point inside the crust where the pressure is released.

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) A lightning conductor cannot protect a building from lightning.

(d) Earthquakes can be predicted in advance.

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

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

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

Solution:

(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 a positive charge on its surface and a charged plastic straw has a negative charge on its surface.

(c) This statement is False.

The lightning conductor is a device which is used to protect a tall building from lightning.

(d) This statement is False.

An earthquake is a sudden shaking or trembling of the earth.

(e) This statement is True.

The Richter scale is used to measure the magnitude (or intensity) of an earthquake.

(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.

(g) This statement is False.

A seismograph is an instrument which is used to measure and record an earthquake.

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 aluminum 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 the earth's crust is called a…….

Solution:

(a) Repel and …. attract.

(b) Positive.

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(c) Negative.

(d) Electrons.

(e) Friction.

(f) Repel

(g) Earthing

(h) Electric

(i) Plate

Short Answer Type Questions

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

Solution:

When a plastic comb is a dry hair, it becomes negatively charged. The negatively charged comb induces a positive charge on the pieces of paper which are neutral.

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

Solution:

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.

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

Solution:

An inflated balloon can be charged by rubbing it against the woollen cloth. The wool loses an electron to move from the wool to the balloon's surface.

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

Solution:

A plastic comb can be charged by rubbing. The plastic comb will carry a negative charge.

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

Solution:

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

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 a reason for your answer.

Solution:

When a glass rod is rubbed with a silk cloth, it acquires a positive charge. When it is touched with the metal top of an electroscope, both the metal top and leaves acquire a positive charge due to conduction.

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

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Solution:

After rubbing the plastic comb, it acquires a 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.

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

Solution:

When we touch the metal top of a charged electroscope with our finger the leaves of an electroscope will collapse. It loses charge and discharges through our body. This is called earthing.

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

Solution:

The process of transfer of charge from a charged body to the earth is called Earthing.

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

Solution:

This disturbance in the earth's crust shows up as an earthquake on the surface of the earth.

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

Solution:

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.

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

Solution:

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

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

Solution:

Umbrellas are made up of metals. The electric discharge from clouds can travel through the metal rod of umbrellas and may get shocked.

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?

Solution:

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.

40. Suggest three measures to protect ourselves from lightning.

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Solution:

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

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

3. Electric appliances should be unplugged.

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.

Solution:

The sweater or a polyester shirt gets charged due to friction between the sweater and the body. That is why we can see tiny sparks of light and crackling sound when we take off a woollen sweater or polyester cloth.

42. (a) Name the material of which a lightning conductor is made.

(b) What is the shape of the top end of a lightning conductor?

(c) Where is the upper end of the lightning conductor fixed in a building?

(d) Where is the lower end of the lightning conductor fixed and how?

Solution:

(a) The lightning conductor is made up of metal which is a good conductor of electricity and used to protect building which is tall from lightening.

(b) The lightning conductor is made of a metal rod with a sharp-pointed edge on the top.

(c) One end of the rod is kept out in the air and the other end is buried deep in the ground.

(d) 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.

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

Solution:

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

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

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

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

Solution:

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

2. 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 until the tremors stop.

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

Solution:

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

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

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

Multiple Choice Questions (MCQ's)

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

(a) A plastic scale

(b) A copper rod

(c) An inflated balloon

(d) A woollen cloth

Solution:

Option (b) is the answer.

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

(a) The glass rod and silk cloth both acquire positive charge

(b) The glass rod becomes positively charged while the silk cloth has a negative charge.

(c) The glass rod and silk cloth both acquire a negative charge.

(d) The glass rod becomes negatively charged while the silk cloth has a positive charge.

Solution:

Option (b) is the answer.

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

(a) Atoms

(b) Protons

(c) Neutrons

(d) Electrons

Solution:

Option (d) is the answer.

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

(a) Isaac Newton

(b) Robert Hooke

(c) Benjamin Franklin

(d) Thales

Solution:

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Option (c) is the answer.

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

(a) A and B

(b) B and C

(c) A and D

(d) B and D

Solution:

Option (c) is the answer.

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56. The magnitude of an earthquake is measured on:

(a) Celsius scale

(b) Kelvin scale

(c) Decibel scale

(d) Richter scale

Solution:

Option (d) is the answer.

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

(a) Two lines as strong as an earthquake of magnitude 1

(b) Four lines as strong as an earthquake of magnitude 1

(c) Ten lines as strong as an earthquake of magnitude 1

(d) Hundred lines as strong as an earthquake of magnitude 1

Solution:

Option (c) is the answer.

58. The epicentre of an earthquake is:

(a) Deep under the crust of the earth

(b) In the mantle of the earth

(c) On the surface of the earth

(d) In the core of the earth.

Solution:

Option (c) is the answer.

59. The waves generated by the earthquake tremors are called

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(a) Ultrasonic waves

(b) Rhythmic waves

(c) Systemic waves

(d) Seismic waves

Solution:

Option (d) is the answer.

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

(a) The object loses some electrons

(b) The object loses some protons

(c) The object gains some electrons

(d) The object gains some Protons

Solution:

Option (c) is the answer.

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

(a) Stethoscope

(b) Telescope

(c) Kaleidoscope

(d) Electroscope

Solution:

Option (d) is the answer.

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

(a) Electric potential

(b) Electric induction

(c) Friction

(d) Electromagnetic induction

Solution:

Option (b) is the answer.

63. A lightning conductor is a device which transfers:

(a) Electric energy

(b) Light energy

(c) Solar energy

(d) Photoelectric energy

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Solution:

Option (a) is the answer.

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

(a) The hair loses some positive protons

(b) The hair gain some positive protons

(c) The hair loses some negative electrons

(d) The hair gains some negative electrons

Solution:

Option (c) is the answer.

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

(a) Mantle

(b) Inner-core

(c) Outer core

(d) Crust

Solution:

Option (c) is the answer.

66. Which of the following area of India is not the most threatened by an earthquake?

(a) North-east

(b) Kashmir

(c) West Bengal

(d) Rajasthan

Solution:

Option (c) is the answer.

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

(a) Seismic zone of the earth

(b) The epicentre of the earthquake

(c) Fault zone of the earth

(d) The focus of the earthquake

Solution;

Option (d) is the answer.

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

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(a) A and B

(b) B and C

(c) A and D

(d) B and D

Solution:

Option (b) is the answer.

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

(a) Heat energy

(b) Electric energy

(c) Chemical energy

(d) Nuclear energy

Solution:

Option (b) is the answer.

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

(a) Friction

(b) Induction

(c) Conduction

(d) Convection

Solution:

Option (a) is the answer.

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