

8th Science Lesson 16 Questions in English

16] Magnetism

1. Which of these given elements are attracted to the magnets?

- a) Iron
- b) Cobalt
- c) Nickel
- d) All the above**

Explanation

Magnets are objects of stone, metal or other material which have the property of attracting metals like iron, cobalt and nickel.

2. Assertion (A): Magnetism is a branch of physics deals with the property of a magnet.

Reasoning(R): Magnetism property of magnets is either natural or induced.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

The attracting property of a magnet is called magnetism and it is either natural or induced. The branch of physics which deals with the property of a magnet is also called magnetism.

3. Choose the correct statements.

- i) The Chinese people had the knowledge of magnets and its properties before 200 B.C.
 - ii) In 1200 A.D. the Chinese used a magnetic compass for navigation purposes.
- a) i only
 - b) ii only
 - c) Both i and ii**
 - d) Neither i nor ii

Explanation

The earliest evidence for magnets are found in a region of Asia Minor called Magnesia. It is believed that the Chinese had known the property of magnet even before 200 B.C. They used a magnetic compass for navigation in 1200 A.D.

4. Which of these daily usage devices use the magnets?

- a) Elevators
- b) Computers
- c) Refrigerators
- d) All the above**

Explanation

Today magnets play an important role in our lives. Magnets are used in refrigerators, computers, car engines, elevators and many other devices.

5. How many types of magnets are classified based on its nature?

- a) 2
- b) 7
- c) 4
- d) 5

Explanation

Magnets are classified into two types. They are: i. Natural magnets ii. Artificial magnets

6. Which of this property is not related to natural magnets?

- a) Permanent magnets.
- b) Naturally found materials.
- c) **After few years of usage they lose their magnetic property.**
- d) Available in various places of the earth.

Explanation

Magnets found in the nature are called natural magnets. They are permanent magnets they will never lose their magnetic power. These magnets are found in different places of the earth in the sandy deposits.

7. Assertion (A): Loadstone, the ore of iron is one of the strongest natural magnets.

Reasoning(R): Pyrrhotite, Ferrite and Coulumbite are some of the natural magnets.

- a) **Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Lodestone called magnetite (Iron oxide) which is the ore of iron is the strongest natural magnet. Minerals like Pyrrhotite (Iron Sulphide), Ferrite and Coulumbite are also natural magnets.

8. Which of these is not an iron ore?

- a) Hematite
- b) **Sulphate**
- c) Siderite
- d) Magnetite

Explanation

There are three types of iron ores. They are Hematite (69% of Iron), Magnetite (72.4% of Iron) and Siderite (48.2% of Iron).

9. Which of this iron have more magnetic property?

- a) Ferrite
- b) Pyrrhotite
- c) Coulumbite
- d) Magnetite**

Explanation

Magnetite is an oxide ore of iron with the formula Fe_3O_4 . Among these ores, Magnetite has more magnetic property.

10. Assertion (A): Man-made magnets are weaker than the natural magnets.

Reasoning(R): Artificial magnets are made in the laboratories or factories.

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is False but R is True.**
- d) Both A and R is False.

Explanation

Magnets that are made by people in the laboratory or factory are called artificial magnets. These are also known as man-made magnets, which are stronger than the natural magnets.

11. What is the shape of the artificial magnets?

- a) Ring magnets
- b) Horseshoe magnets
- c) Cylindrical magnets
- d) All the above**

Explanation

Artificial magnets can be made in various shapes and dimensions. Bar magnets, U-shaped magnets, horseshoe magnets, cylindrical magnets, disc magnets, ring magnets and electromagnets are some examples of artificial magnets.

12. Assertion (A): Neodymium and Samarium are used to make artificial magnets.

Reasoning(R): Iron and nickel are not used to make artificial magnets.

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.**
- d) Both A and R is False.

Explanation

Artificial magnets are usually made up of iron, nickel, cobalt, steel, etc. Alloy of the metals Neodymium and Samarium are also used to make artificial magnets.

13. Choose the Incorrect statements about Natural magnets.

- i) Irregular shapes and dimensions.
 - ii) Long lasting magnets.
 - iii) It is easy to change the strength of the magnets.
- a) i only
b) ii only
c) **iii only**
d) All the above

14. Which of these are true about the artificial magnets?

- a) Artificial magnets have a vast usage in various products.
- b) These can be made in different shapes and dimensions.
- c) The magnetic properties are time bound.
- d) **All the above**

Explanation

Natural Magnets	Artificial Magnets
These are found in nature and have irregular shapes and dimensions.	These are man-made magnets. They can be made in different shapes and dimensions.
The strength of a natural magnet is well determined and difficult to change.	Artificial magnets can be made with required and specific strength.
These are long lasting magnets.	Their properties are time bound.
They have a less usage.	They have a vast usage in day to day life.

15. Choose the correct statements.

- i) William Gilbert suggested that the Earth has a giant bar magnet.
 - ii) William Gilbert was the first man to conduct the systematic research on the properties of the lodestone (magnetic iron ore).
 - iii) He published his findings in 'De Magnete' (The Magnet).
- a) i only
b) **ii only**

c) iii only

d) All the above

Explanation

William Gilbert laid the foundation for magnetism and suggested that the Earth has a giant bar magnet. William Gilbert was born on 24th May 1544. He was the first man who performed the systematic research on the properties of the lodestone (magnetic iron ore) and published his findings in the influential 'De Magnete' (The Magnet).

16. Which of these is not a property of a magnet?

a) Attractive property

b) Refractive property

c) Reflective property

d) Directive property

Explanation

The properties of a magnet can be explained under the following headings.

- Attractive property
- Reflective property
- Directive property

17. The Magnets are attracted at the ____ by the _____ property of a magnet.

a) Center, Directive

b) Edges, Reflective

c) Poles, Attractive

d) All over, Refractive

Explanation

The ends are called poles of a magnet. This shows that the attractive property of a magnet is more at the poles.

18. Assertion (A): Magnetic poles always exist in pairs.

Reasoning(R): A broken piece of magnet acts like a separate bar magnet.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Magnetic poles always exist in pairs. Each broken piece behaves like a separate bar magnet.

19. Choose the Incorrect statements.

i) The strength of the magnets is unaltered even when it is split.

ii) A horizontal cut does not change the polarity of the magnets.

iii) If a magnet is split vertically then each piece acts as an individual magnet.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

When a magnet is split vertically, the length of the magnet is altered and each piece acts as a magnet. When a magnet is split horizontally the length of the new pieces of magnet remains unaltered and there is no change in their polarity. In both cases the strength of the magnet is reduced.

20. What happens if the south poles of two magnets are brought close together?

a) Attracted

b) Unaltered

c) Repelled

d) Ideal state

Explanation

The magnetic poles repel each other that are a north pole repels another north pole and a south pole repels another south pole. If you bring the south pole of the magnet close to the north pole of the suspended magnet you can see that the south pole of the suspended magnet is immediately attracted.

21. Which of the magnetic poles attract each other?

a) North poles of magnets only

b) South poles of magnets only

c) Northern and southern edges only

d) North and South poles of magnets.

Explanation

Unlike poles of a magnet attract each other than the North Pole and the South Pole of a magnet attract each other.

22. Assertion (A): Any magnet aligning itself along the geographic north-south direction is called as the directive property.

Reasoning(R): A freely suspended bar magnet always align in the geographic north-south direction.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

A freely suspended bar magnet always aligns itself in the geographic north-south direction. The property of a magnet, by which it aligns itself along the geographic north-south direction, when it is freely suspended, is known as the directive property of a magnet.

23. Define a magnetic field.

- a) Magnetic effects on other substances.
- b) Specific direction property of magnets.
- c) The space around a magnet with the influence of the magnetic effect.**
- d) Effect of magnets in their poles.

Explanation

The space around the bar magnet where the arrangement of iron filings exists, represents the field of influence of the bar magnet. It is called the magnetic field. Magnetic field is defined as the space around a magnet in which its magnetic effect or influence is observed.

24. What is the unit of the magnetic field?

- a) Tesla
- b) Tetra
- c) Gauss
- d) Both a and c**

Explanation

Magnetic field is measured by the unit tesla or gauss (1 tesla = 10,000 gauss).

25. Assertion (A): The Compass needle is deflected more if it is kept near to a magnet.

Reasoning(R): The deflection of the compass needle varies with the shape of the materials.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.**

Explanation

The compass needle gets deflected to a large extent, when it is closer to the magnet. When the distance is large, the deflection of the needle is gradually decreased.

26. When a compass needle will have a zero deflection point?

- a) Minimum magnetic field.
- b) Maximum magnetic field.
- c) Zero magnetic force**
- d) None of the above

Explanation

At one particular position there is no deflection because there is no magnetic force at this position. This shows that each magnet exhibits its magnetic influence around its specific region.

27. In which direction the needle of a plotting compass rests?

- a) South-North
- b) North-South**
- c) North-East
- d) All the above

Explanation

A compass needle, also known as plotting compass or magnetic needle, consists of a tiny pivoted magnet in the form of a pointer, which can rotate freely in the horizontal plane. The ends of the compass needle point approximately towards the geographic north and south direction.

28. Assertion (A): Materials attracted by the magnets are called as magnetic materials.

Reasoning(R): Permanent magnets are produced by the magnetic and non-magnetic materials.

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.**
- d) Both A and R is False.

Explanation

Materials which are attracted by magnets are called magnetic materials and those materials which are not attracted by magnets are called non-magnetic materials. There are a number of materials that can be attracted by magnets. These can be magnetized to create permanent magnets.

29. Which of these magnets can be easily magnetized?

- a) Permanent magnets
- b) Soft materials**
- c) Natural magnets
- d) All the above

Explanation

Magnetic materials can be categorized as magnetically hard or magnetically soft materials. Magnetically soft materials are easily magnetized.

30. Which of these statements are true regarding magnetically hard materials?

- a) Hard materials cannot be magnetized.
- b) Hard materials have same atomic structure.
- c) A strong magnetic field is required to magnetize hard materials.**
- d) Hard materials do not change its behavior in a magnetic field.

Explanation

Magnetically hard materials also can be magnetized but they require a strong magnetic field to be magnetized. It is because materials have different atomic structure and they behave differently when they are placed in a magnetic field.

31. How many types of magnetic fields are categorized based on their behavior?

- a) 7
- b) 4
- c) 3
- d) 5

Explanation

Based on their behavior in a magnetic field they can be classified as below.

- Diamagnetic
- Paramagnetic
- Ferromagnetic

32. Which of these is not a characteristic of diamagnetic material?

- a) Align perpendicular to the direction of uniform magnetic field.
- b) Temperature changes will affect the magnetic character of the substances.**
- c) Magnetized in the opposite direction to the magnetic field.
- d) In a non-uniform magnetic field they move from strong part to weaker part.

Explanation

Diamagnetic materials have the following characteristics.

- When suspended in an external uniform magnetic field they will align themselves perpendicular to the direction of the magnetic field.
- They have a tendency to move away from the stronger part to the weaker part when suspended in a non-uniform magnetic field.
- They get magnetized in a direction opposite to the magnetic field.
- Magnetic character of these substances is not affected by the external temperature.

33. Which of these is not a diamagnetic substance?

- a) Steel**
- b) Mercury
- c) Alcohol
- d) Hydrogen

Explanation

Examples for diamagnetic substances are bismuth, copper, mercury, gold, water, alcohol, air and hydrogen.

34. Choose the correct statements regarding the paramagnetic materials.

- i) Tendency to move from strong part to weaker part in a non-uniform magnetic field.

- ii) External temperature does not affect the characteristics of the substances.
iii) Align parallel to the magnetic field direction in a uniform magnetic field.

- a) i only
b) ii only
c) iii only
d) All the above

Explanation

The following are the characteristics of paramagnetic materials.

- When suspended in an external uniform magnetic field they will align themselves parallel to the direction of the magnetic field.
- They have a tendency to move from the weaker part to the stronger part when suspended in a non-uniform magnetic field.
- They get magnetized in the direction of the field.
- Examples for paramagnetic substances are aluminium, platinum, chromium, oxygen, manganese, solutions of salts of nickel and iron.
- Magnetic character of these substances is affected by the external temperature.

35. Which of this material becomes a Para magnetic material when heated?

- a) Iron
b) Gold
c) Aluminium
d) Mercury

Explanation

The characteristics of ferromagnetic materials are given below.

- When suspended in an external uniform magnetic field they will align themselves parallel to the direction of the magnetic field.
- It has a tendency to move quickly from the weaker part to the stronger part when suspended in a non-uniform magnetic field.
- They get strongly magnetized in the direction of the field.
- Examples for ferromagnetic substances are iron, cobalt, nickel, steel and their alloys.
- Magnetic character of these substances is affected by the external temperature. When they are heated they become Para magnetic.

36. At which of this temperature the Ferro magnetic material changes into Para magnet?

- a) Room Temperature
b) Zero Temperature
c) Curie Temperature
d) All the above

Explanation

The temperature at which the ferromagnetic material becomes paramagnetic is called the Curie temperature.

37. Which of these methods produce artificial magnets?

- a) Electrical magnetizing
- b) Stroking with magnetite
- c) Stroking with other artificial magnets.
- d) All the above**

Explanation

Artificial magnets are produced from magnetic materials. These are generally made by magnetizing iron or steel alloys electrically. These magnets are also produced by stroking a magnetic material with magnetite or with other artificial magnets.

38. Assertion (A): The Artificial magnets are classified based on the ability to regain their magnetic property.

Reasoning(R): Permanent magnets and Temporary magnets are the types of artificial magnets.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Depending on their ability to retain their magnetic property, artificial magnets are classified as permanent magnets or temporary magnets.

39. Choose the Incorrect statements.

- i) Temporary magnets lose their magnetic property if the external magnetic field is removed.
 - ii) Hard iron under the influence of external magnetic field makes a temporary magnet.
 - iii) Magnets used in the electric bell are the example for a temporary magnet.
- a) i only
 - b) ii only**
 - c) iii only
 - d) All the above

Explanation

Temporary magnets are produced with the help of an external magnetic field. They lose their magnetic property as soon as the external magnetic field is removed. They are made from soft iron. Soft iron behaves as a magnet under the influence of an external magnetic field produced in a coil of wire carrying a current. But, it loses the magnetic properties as soon as the current is stopped in the circuit. Magnets used in electric bells and cranes are the examples of temporary magnets.

40. Assertion (A): Magnetization is a process of making temporary magnets by exposing the substances to an external magnetic field.

Reasoning(R): Magnetization is the only method for producing artificial magnets.

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.**

Explanation

Magnetization is a process in which a substance is made a permanent or temporary magnet by exposing it to an external magnetic field. This is one of the methods to produce artificial magnets.

41. Choose the incorrect statements.

- i) The Permanent magnets lose their magnetic property in the absence of an external magnetic field.
- ii) Permanent magnets are produced from hardened steel and some alloys.

- a) i only**
- b) ii only
- c) Both i and ii
- d) Neither i nor ii

Explanation

Permanent magnets are artificial magnets that retain their magnetic property even in the absence of an external magnetic field. These magnets are produced from substances like hardened steel and some alloys.

42. Which of these elements are not present in ALNICO magnets?

- a) Aluminium
- b) Cobalt
- c) Nickel
- d) Copper**

Explanation

The most commonly used permanent magnets are made of ALNICO (An alloy of aluminium, nickel and cobalt).

43. Which is one of the strongest and powerful magnets on the earth?

- a) Neodymium**
- b) Loadstone
- c) ALNICO
- d) Para Magnet

Explanation

Magnets used in refrigerator, bar magnet, speaker magnet, fridge magnet and magnetic compass are some familiar examples of a permanent magnet. Neodymium magnets are the strongest and the most powerful magnets on the Earth.

44. Which of these actions does not remove the magnetic properties?

- a) Keeping idle for a long time.
- b) Cutting down the magnet into two pieces.**
- c) Heating to a high temperature.
- d) Passing a variable current in a coil.

Explanation

The magnetic properties of a magnet will be removed from it by the following ways.

- Placing the magnet idle for a long time.
- Continuous hammering of the magnetic substance.
- Dropping the magnet from a height.
- Heating a magnet to a high temperature.
- Passing a variable current in a coil that encloses the magnet.
- Improper storage of the magnet.

45. Which of these joins the magnetic poles of the earth?

- a) Magnetic axis**
- b) Equatorial
- c) Geographical axis
- d) All the above

Explanation

The position of the Earth's magnetic poles is not well defined in the Earth. The south pole of the imaginary magnet inside the Earth is located near the geographic North Pole and the north pole of the earth's magnet is located near the geographic South Pole. The line joining these magnetic poles is called the magnetic axis.

46. Assertion (A): The Magnetic axis and the Geographical axis of the earth do not coincide with each other.

Reasoning(R): The magnetic axis is inclined at an angle of about 10° to 15° with the geographical axis of the earth.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

The magnetic axis intersects the geographic North Pole at a point called the north geomagnetic pole or northern magnetic pole. It intersects the geographic South Pole at a point called the south

geomagnetic pole or southern magnetic pole. The magnetic axis and the geographical axis (axis of rotation) do not coincide with each other. The magnetic axis of the Earth is inclined at an angle of about 10° to 15° with the geographical axis.

47. Which is the most powerful magnet in the Universe?

- a) Mercury
- b) Mars
- c) **Magnetar**
- d) Andromeda

Explanation

The most powerful magnet in the universe is actually a neutron star called magnetar (magnetic neutron star) located in the Milky Way Galaxy. The diameter of the magnetar is 20 kilometer and its mass is 2 to 3 times that of the Sun. Its magnetic field is so enormous and lethal that it is capable of absorbing all the iron atoms from the bloodstream (hemoglobin) of a living body even if it is positioned at a distance of 1000 km from it.

48. Which of these factors does not affect Earth's magnetism?

- a) Moon action
- b) Magnetic substances in the Earth
- c) **Meteorites and Asteroids**
- d) Sun radiations

Explanation

The exact cause of the Earth's magnetism is not known even today. However, some important factors, which may be the cause of the Earth's magnetism, are as follows.

- Masses of magnetic substances in the Earth
- Radiations from the Sun
- Action of the Moon

49. Which of these is the reason for the earth's magnetic field?

- a) **Molten metallic fluid in Earth's surface**
- b) Atmospheric magnetic field
- c) Sun light and its energy
- d) Gravitational force

Explanation

The Earth's magnetic field is due to the molten charged metallic fluid inside the Earth's surface with a core of radius of about 3500 km compared to the Earth's radius of 6400 km.

50. Which of these makes the pigeons to navigate their place?

- a) **Magneto-reception**
- b) Infra-red recognition

- c) High frequency ranges
- d) UV rays

Explanation

Pigeons have extraordinary navigational abilities. It enables them to find their way back home even if you take them to a place where they have never been before. The presence of magnetite in their beaks enables them to sense the magnetic field of the Earth. Such a magnetic sense is called magneto-reception.

51. Choose the correct statements.

- i) Earth behaves like a huge magnetic dipole with poles located near its geographical poles.
 - ii) A freely suspended magnetic needle rest at geographical north-south direction in Earth.
- a) i only
 - b) ii only
 - c) Both i and ii
 - d) Neither i nor ii

Explanation

A freely suspended magnetic needle at a point on the Earth comes to rest approximately along the geographical north- south direction. This shows that the Earth behaves like a huge magnetic dipole with its magnetic poles located near its geographical poles.

52. Assertion (A): The North Pole of a magnetic needle points towards the geographic north.

Reasoning(R): The Magnetic south pole of a needle is attracted by the magnetic north pole of the Earth.

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

The north pole of a magnetic needle approximately points towards the geographic north (NG). Thus, it is appropriate to say that the magnetic north pole of the needle is attracted by the magnetic south pole of the Earth (S_m), which is located at the geographic north NG. Also, the magnetic south pole of the needle is attracted by the magnetic north pole of the Earth (N_m), which is located at the geographic south SG.

53. What is the Earth's magnetic field strength at its surfaces?

- a) 100 nano tesla
- b) 25 to 65 micro tesla
- c) 500 micro tesla
- d) 2000 micro tesla

Explanation

The magnitude of the magnetic field strength at the Earth's surface ranges from 25 to 65 micro tesla.

54. Which of these daily products have magnets?

- a) Electric Motors
- b) Microphones
- c) Computer devices
- d) All the above**

Explanation

We come into contact with magnets often in our daily life. They are used in wide range of devices. Some of the uses of magnets are given below.

- In ancient times the magnet in the form of 'direction stone' helped seamen to find the directions during a voyage.
- Nowadays, magnets are used to generate electricity in dynamos.
- Magnets, especially electromagnets are used in our day to day life.
- They are used in electric bells and electric motors.
- They are used in loudspeakers and microphones.
- An extremely powerful electromagnet is used in the fast moving Maglev train to remain floating above the tracks.
- In industries, magnetic conveyor belts are used to sort out magnetic substances from scraps mixed with non-magnetic substances.
- Magnets are used in computer in its storing devices such as hard disks.

55. Which of these statements is not true regarding the Maglev trains?

- a) Maglev train has wheels are operated by the controlled electromagnets.**
- b) The Strong magnetic forces make the train to float above the tracks.
- c) Maglev trains are the fastest train in the world.
- d) The Speed attained by the maglev train is around 500kn/hr.

Explanation

Maglev train (Magnetic levitation train) has no wheels. It floats above its tracks due to strong magnetic forces applied by computer controlled electromagnets. It is the fastest train in the world. The speed attained by this train is around 500 km/hr.