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Physics Grade 9 — Chapter 8

Magnetism

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Independent practice MCQs from the supplied Class 9 Physics notes pack. Total: 50 questions. Each item has four options, the correct letter, and a short explanation.

A. Important / Main Topics

1. The basis of magnetism is the motion of:

(A) Charged particles (electrons)
(B) Neutrons
(C) Protons
(D) Photons

Correct Answer: A

Explanation: The text states that the basis of magnetism is the motion of charge particles.

2. A group of atoms with their magnetic fields aligned is called a:

(A) Molecule
(B) Domain
(C) Crystal
(D) Lattice

Correct Answer: B

Explanation: The text defines a domain as a group of atoms having parallel magnetic field.

3. In an unmagnetized material, the domains are:

(A) Aligned
(B) Missing
(C) Randomly oriented
(D) All pointing north

Correct Answer: C

Explanation: The text states that in unmagnetized material the domains are randomly oriented.

4. In a magnetized material, the domains are:

(A) Randomly oriented
(B) Missing
(C) All pointing south
(D) Aligned

Correct Answer: D

Explanation: The text states that in a magnetized material, the domains are aligned.

5. The process of aligning domains in a material is called:

(A) Magnetization
(B) Demagnetization
(C) Ionization
(D) Polarization

Correct Answer: A

Explanation: Magnetization is the process of aligning the domains.

6. The process of randomizing domains in a material is called:

(A) Magnetization
(B) Demagnetization
(C) Ionization
(D) Polarization

Correct Answer: B

Explanation: Demagnetization is the process of randomizing the domains.

7. Which of the following is a ferromagnetic material?

(A) Copper
(B) Wood
(C) Iron
(D) Plastic

Correct Answer: C

Explanation: Iron is a ferromagnetic material, which means it can be strongly magnetized.

8. Like magnetic poles:

(A) Attract each other
(B) Have no effect on each other
(C) Cancel each other out
(D) Repel each other

Correct Answer: D

Explanation: The text states that in magnets like poles repel each other.

9. Unlike magnetic poles:

(A) Attract each other
(B) Repel each other
(C) Have no effect on each other
(D) Cancel each other out

Correct Answer: A

Explanation: The text states that unlike poles attract each other.

10. Magnets are always:

(A) Monopolar
(B) Bipolar
(C) Tripolar
(D) Non-polar

Correct Answer: B

Explanation: The text states that magnets are always bipolar (they have two poles: N and S).

11. The region around a magnet where it exerts a force is called the:

(A) Electric field
(B) Gravitational field
(C) Magnetic field
(D) Temperature field

Correct Answer: C

Explanation: The text defines the magnetic field as the region around a magnet where it exerts a force on other magnetic poles.

12. The SI unit of magnetic field strength is the:

(A) Newton
(B) Joule
(C) Watt
(D) Tesla

Correct Answer: D

Explanation: The text states that the intensity of magnetic field (B) is measured in the unit called tesla (T).

13. The direction of the magnetic field at a point is the direction of the force on a:

(A) North pole
(B) South pole
(C) Positive charge

(D) Negative charge

Correct Answer: A

Explanation: The text states that the direction of the magnetic field can be found by the direction of force acting on the N-pole.

14. Magnetic field lines emerge from the:

(A) South pole and enter the North pole
(B) North pole and enter the South pole
(C) Center of the magnet
(D) Equator of the magnet

Correct Answer: B

Explanation: The text states that the field lines originate from N-pole and terminate at S-pole.

15. The magnetic field is strongest where the field lines are:

(A) Farthest apart
(B) Parallel
(C) Closest together
(D) Perpendicular

Correct Answer: C

Explanation: The text states that the field is stronger where the field lines are closer.

16. When a bar magnet is broken in half, each piece will have:

(A) Only a north pole
(B) Only a south pole
(C) No poles
(D) Both a north and a south pole

Correct Answer: D

Explanation: Magnets are always bipolar. Breaking a magnet creates two new magnets, each with both poles.

17. The magnetic field is strongest at the:

(A) Poles of the magnet
(B) Center of the magnet
(C) Equator of the magnet
(D) Far away from the magnet

Correct Answer: A

Explanation: The magnetic force is strongest at the poles (north and south).

18. Which of the following is a method of inducing magnetism?

(A) Cooling the material
(B) Stroking with a permanent magnet
(C) Breaking the material
(D) Dissolving the material

Correct Answer: B

Explanation: The text describes the stroking method for inducing magnetism.

19. A solenoid is:

(A) A permanent magnet
(B) A type of magnetic material
(C) A coil of wire
(D) A device for measuring magnetism

Correct Answer: C

Explanation: The text defines a solenoid as a coil of wire wrapped around a cylindrical core.

20. An electromagnet is a:

(A) Permanent magnet
(B) Non-magnetic material

(C) Type of solenoid
(D) Temporary magnet

Correct Answer: D

Explanation: An electromagnet is a temporary magnet that acts as a magnet only while current flows.

21. Materials that easily magnetize and demagnetize are called:

(A) Soft magnetic materials
(B) Hard magnetic materials
(C) Non-magnetic materials
(D) Permanent magnets

Correct Answer: A

Explanation: The text states that materials which easily magnetize and demagnetize are called soft magnetic materials.

22. Which of the following is a hard magnetic material?

(A) Soft iron
(B) Steel
(C) Copper
(D) Aluminum

Correct Answer: B

Explanation: The text states that steel is a hard magnetic material (it cannot be easily magnetized and demagnetized).

23. Heating a magnet:

(A) Increases its magnetism
(B) Has no effect
(C) Demagnetizes it
(D) Reverses its poles

Correct Answer: C

Explanation: The text states that heat speeds up the movements of already aligned domains, causing misalignment and demagnetization.

24. A permanent magnet is made from:

(A) Soft magnetic materials
(B) Non-magnetic materials
(C) Conducting materials
(D) Hard magnetic materials

Correct Answer: D

Explanation: The text states that permanent magnets are made from hard magnetic materials.

25. An electromagnet is made from:

(A) Soft magnetic materials
(B) Hard magnetic materials
(C) Non-magnetic materials
(D) Insulating materials

Correct Answer: A

Explanation: The text states that electromagnets are made from soft magnetic materials.

B. Less Important / Secondary Topics

26. Which of the following is a use of permanent magnets?

(A) Compass
(B) Lifting crane
(C) Doorbell
(D) Relay

Correct Answer: A

Explanation: A compass uses a permanent magnet (the compass needle) to align with the Earth's magnetic field.

27. Which of the following is a use of electromagnets?

(A) Refrigerator magnet
(B) Lifting crane
(C) Compass
(D) Bar magnet

Correct Answer: B

Explanation: Lifting crane — this correctly answers the question.

28. A loudspeaker uses:

(A) Only permanent magnets
(B) Only electromagnets
(C) Both permanent magnets and electromagnets
(D) Neither permanent magnets nor electromagnets

Correct Answer: C

Explanation: A loudspeaker uses a permanent magnet to provide a static magnetic field and an electromagnet (voice coil) to produce sound.

29. Magnetic recording stores information by:

(A) Burning the medium
(B) Melting the medium
(C) Freezing the medium
(D) Magnetizing portions of the medium

Correct Answer: D

Explanation: The text states that magnetic recording saves data by selective magnetization of some portion of a magnetic material.

30. The device that writes data onto a magnetic medium is called a:

(A) Recording head
(B) Playback head
(C) Speaker
(D) Magnetometer

Correct Answer: A

Explanation: The text states that a magnetic tape head (recording head) writes data by aligning magnetic domains according to the applied current.

31. A magnetic door lock uses:

(A) A permanent magnet only
(B) An electromagnet and a metal plate
(C) A spring mechanism
(D) A hydraulic system

Correct Answer: B

Explanation: The text states that door locks have an electromagnet fixed at the door frame and a metal plate fixed with the door.

32. The magnetic field of a wire carrying a current can be found using:

(A) Fleming's left-hand rule
(B) Fleming's right-hand rule
(C) The right-hand rule
(D) The left-hand rule

Correct Answer: C

Explanation: The text states that the direction of the field around a current-carrying wire is found using the right-hand rule.

33. A neutral zone is a region where the magnetic field is:

(A) Maximum
(B) Minimum but non-zero
(C) Infinite
(D) Zero

Correct Answer: D

Explanation: A neutral zone is a field-free region where the magnetic fields cancel each other out.

34. Materials that are weakly repelled by a magnetic field are called:

(A) Diamagnetic
(B) Paramagnetic
(C) Ferromagnetic
(D) Electromagnetic

Correct Answer: A

Explanation: The text states that diamagnetic materials are slightly repelled by a magnetic field.

35. Materials that are weakly attracted by a magnetic field are called:

(A) Diamagnetic
(B) Paramagnetic
(C) Ferromagnetic
(D) Electromagnetic

Correct Answer: B

Explanation: The text states that paramagnetic materials experience weak attraction to magnets.

36. A material is placed in a magnetic field and its domains align. This material is likely:

(A) Diamagnetic
(B) Paramagnetic
(C) Ferromagnetic
(D) Non-magnetic

Correct Answer: C

Explanation: Ferromagnetic materials have domains that can align with an external field, producing strong magnetization.

37. The Earth's magnetic field is similar to the field of a:

(A) Current-carrying wire
(B) Single electric charge
(C) Gravitational field
(D) Bar magnet

Correct Answer: D

Explanation: The Earth's magnetic field is similar to the magnetic field of a bar magnet.

38. The magnetosphere protects the Earth from:

(A) The solar wind
(B) Meteorites
(C) Gravitational waves
(D) Cosmic rays

Correct Answer: A

Explanation: The magnetosphere deflects the solar wind, protecting the Earth's atmosphere and life from harmful radiation.

39. A compass needle points toward the geographic North Pole because:

(A) The geographic North Pole is a magnetic north pole
(B) The magnetic south pole is near the geographic North Pole
(C) The Earth's rotation causes it
(D) The Sun's gravity pulls it

Correct Answer: B

Explanation: The magnetic south pole is near the geographic North Pole, so the north pole of a compass needle is attracted to it.

40. Auroras are caused by:

(A) The Moon's gravity
(B) The Earth's rotation
(C) Charged particles from the solar wind interacting with the atmosphere
(D) Volcanic eruptions

Correct Answer: C

Explanation: Auroras are caused by charged particles from the solar wind being guided by the Earth's magnetic field toward the poles, where they collide with the atmosphere.

41. A material has a relative permeability slightly less than 1. It is:

(A) Paramagnetic
(B) Ferromagnetic
(C) Non-magnetic
(D) Diamagnetic

Correct Answer: D

Explanation: A material has a relative permeability slightly less than 1. It is Diamagnetic.

42. A material has a relative permeability much greater than 1. It is:

(A) Ferromagnetic
(B) Diamagnetic
(C) Paramagnetic
(D) Non-magnetic

Correct Answer: A

Explanation: A material has a relative permeability much greater than 1. It is Ferromagnetic.

43. A soft iron core is used in an electromagnet because:

(A) It is cheap
(B) It is easily magnetized and demagnetized
(C) It is a permanent magnet
(D) It is non-magnetic

Correct Answer: B

Explanation: Soft iron is a soft magnetic material, meaning it is easily magnetized and demagnetized, making it ideal for electromagnets.

44. A magnetic shield is made from:

(A) Copper
(B) Aluminum
(C) Soft iron
(D) Plastic

Correct Answer: C

Explanation: The text states that the commonly used materials for magnetic shielding are iron, nickel, and cobalt (soft magnetic materials).

45. In a magnetic door lock, when the electromagnet is energized, the door is:

(A) Unlocked
(B) Open
(C) Broken
(D) Locked

Correct Answer: D

Explanation: When the electromagnet is energized, it attracts the metal plate, locking the door.

46. A fail-safe magnetic lock:

(A) Unlocks when power is off

(B) Locks when power is off
(C) Is not affected by power
(D) Uses a permanent magnet

Correct Answer: A

Explanation: A fail-safe lock releases (unlocks) when power is off, allowing escape in an emergency.

47. The playback process in magnetic recording relies on:

(A) Thermionic emission
(B) Electromagnetic induction
(C) Photoelectric effect
(D) Nuclear fission

Correct Answer: B

Explanation: The playback process in magnetic recording relies on Electromagnetic induction.

48. A material is attracted to a magnet. It is likely:

(A) Diamagnetic
(B) Paramagnetic
(C) Ferromagnetic
(D) Non-magnetic

Correct Answer: C

Explanation: Ferromagnetic materials are strongly attracted to magnets.

49. A material is not attracted to a magnet. It is likely:

(A) Ferromagnetic
(B) Always a metal
(C) Always a permanent magnet
(D) Paramagnetic or diamagnetic

Correct Answer: D

Explanation: Non-magnetic materials (diamagnetic and paramagnetic) are not strongly attracted to magnets.

50. The magnetic poles of the Earth:

(A) Drift over time
(B) Are fixed and never move
(C) Are exactly aligned with the geographic poles
(D) Are located at the equator

Correct Answer: A

Explanation: The magnetic poles of the Earth Drift over time.