

Electromagnetism Fundamentals

Science · Practice Test · 25 Questions

1. What is the primary material used in the core of an electromagnet to significantly increase its magnetic field strength?

- A) Copper
- B) Iron
- C) Aluminium
- D) Plastic

2. In a basic direct current (DC) electric motor, what component reverses the direction of current to ensure continuous rotation?

- A) Stator
- B) Commutator
- C) Resistor
- D) Insulator

3. Which scientist is credited with the discovery that an electric current flowing through a wire creates a magnetic field?

- A) Hans Christian Ørsted
- B) Isaac Newton
- C) Albert Einstein
- D) Galileo Galilei

4. What is the unit of measurement for electrical current?

- A) Volt
- B) Watt
- C) Ampere
- D) Ohm

5. When a wire is moved rapidly through a magnetic field, what phenomenon is produced?

- A) Static electricity
- B) Electromagnetic induction
- C) Thermal expansion
- D) Gravitational pull

6. Which property of a solenoid determines the strength of the magnetic field it produces?

- A) The color of the wire
- B) The number of turns of wire
- C) The air temperature
- D) The length of the battery

7. What type of magnetism is temporary and only exists when electricity flows through a conductor?

- A) Permanent magnetism
- B) Electromagnetism
- C) Ferromagnetism
- D) Paramagnetism

8. In a simple electromagnet, what happens to the magnetic strength if the number of wire coils is doubled?

- A) It decreases by half
- B) It stays the same
- C) It becomes stronger
- D) It disappears

9. Which device converts electrical energy into mechanical energy using electromagnetic principles?

- A) Electric motor
- B) Light bulb
- C) Battery
- D) Resistor

10. What is the term for a coil of wire that acts as a magnet when a current passes through it?

- A) Resistor
- B) Capacitor
- C) Solenoid
- D) Transformer

11. Materials like iron, nickel, and cobalt are categorized as what type of magnetic materials?

- A) Diamagnetic
- B) Ferromagnetic
- C) Non-magnetic
- D) Insulating

12. Which component of an electromagnet circuit is the source of the electrical potential difference?

- A) Switch
- B) Wire
- C) Battery
- D) Core

13. What surrounds a permanent magnet and exerts a force on other magnetic materials?

- A) Electric field
- B) Magnetic field
- C) Gravitational field
- D) Thermal field

14. If you bring the North pole of two bar magnets together, what physical interaction occurs?

- A) Attraction
- B) Repulsion
- C) No effect
- D) Neutralization

15. Which of these objects relies on electromagnetism to function?

- A) Wooden ruler
- B) Electric doorbell
- C) Glass marble
- D) Rubber band

16. What is the term for the path that an electric current follows?

- A) Circuit
- B) Conduit
- C) Terminal
- D) Relay

17. A device that increases or decreases voltage in an AC circuit using electromagnetic induction is called a:

- A) Generator
- B) Transformer
- C) Switch
- D) Fuse

18. What is the most common metal used in electrical wiring due to its high conductivity?

- A) Iron
- B) Gold
- C) Copper
- D) Silver

19. Which part of a permanent magnet has the strongest magnetic force?

- A) The center
- B) The poles
- C) The sides
- D) The surface

20. What happens to the magnetic field of an electromagnet if the direction of the electric current is reversed?

- A) The field gets weaker
- B) The polarity of the magnet reverses
- C) The field remains unchanged
- D) The current stops flowing

21. Which of these materials is an electrical insulator?

- A) Copper wire
- B) Rubber
- C) Iron nail
- D) Steel

22. What energy transformation occurs in a simple electric generator?

- A) Electrical to mechanical
- B) Chemical to electrical
- C) Mechanical to electrical
- D) Thermal to electrical

23. A magnet that retains its magnetic properties for a long time is called:

- A) A temporary magnet
- B) A permanent magnet
- C) An electromagnet
- D) A demagnetized magnet

24. What is the primary factor that causes the magnetic field around a wire to increase?

- A) Increasing the voltage
- B) Increasing the current
- C) Decreasing the temperature
- D) Changing the wire color

25. The Earth acts like a giant magnet with its magnetic field originating from:

- A) The crust
- B) The atmosphere
- C) The molten outer core
- D) The moon