

Electromagnetism Fundamentals

Science · Answer Key · 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