

Chapter 13 – Magnetic Effects of Electric Current (30 Important Q&A)

Basic Concepts

Q1. Define electromagnetism.

Ans: Production of magnetic field by electric current.

Q2. Who discovered electromagnetism?

Ans: Hans Christian Ørsted

Q3. Define magnetic field.

Ans: Region around a magnet or current-carrying conductor where magnetic effects are observed.

Q4. Unit of magnetic field strength:

Ans: Tesla (T)

Q5. Magnetic field lines around a magnet:

Ans: Emerge from north pole, enter south pole, never cross.

Magnetic Field due to Current

Q6. Right-hand thumb rule:

Ans: Thumb points along current, curl of fingers shows magnetic field direction around a conductor.

Q7. Solenoid:

Ans: Coil of wire carrying current; behaves like a bar magnet.

Q8. Magnetic field inside a solenoid:

Ans: Strong and uniform along axis; weaker outside.

Q9. Factors affecting solenoid strength:

Ans: Number of turns, current, core material.

Q10. Core material for stronger solenoid:

Ans: Soft iron

Electromagnet

Q11. Electromagnet:

Ans: Solenoid with soft iron core; magnetic strength controlled by current.

Q12. Uses of electromagnets:

Ans: Electric bell, crane for scrap lifting, motors, MRI.

Q13. Temporary vs permanent magnet:

Ans: Electromagnet = temporary; bar magnet = permanent.

Q14. Magnetic field around straight conductor:

Ans: Concentric circles around conductor.

Q15. Magnetic field around circular loop:

Ans: Field lines form loops through the center.

Electric Motor & Generator

Q16. Principle of electric motor:

Ans: Current-carrying conductor in magnetic field experiences force (Fleming's left-hand rule).

Q17. Fleming's left-hand rule:

Ans: Thumb = motion, forefinger = field, middle finger = current.

Q18. DC motor converts:

Ans: Electrical energy → mechanical energy

Q19. AC generator converts:

Ans: Mechanical energy → electrical energy

Q20. Working principle of generator:

Ans: Electromagnetic induction – moving conductor in magnetic field induces current.

Electromagnetic Induction

Q21. Electromagnetic induction:

Ans: Production of induced current in a conductor due to change in magnetic flux.

Q22. Factors affecting induced current:

Ans: Strength of magnetic field, speed of motion, number of turns.

Q23. Applications of electromagnetic induction:

Ans: Electric generator, transformer, induction cooktop.

Q24. Transformer principle:

Ans: Electromagnetic induction – changes voltage level.

Q25. Step-up transformer:

Ans: Increases voltage, decreases current.

Miscellaneous

Q26. Step-down transformer:

Ans: Decreases voltage, increases current.

Q27. Fleming's right-hand rule:

Ans: Thumb = motion of conductor, forefinger = field, middle finger = induced current.

Q28. Solenoid with iron core is called:

Ans: Electromagnet

Q29. Force on conductor is maximum when:

Ans: Conductor is perpendicular to magnetic field.

Q30. Applications of magnetic effects of current:

Ans: Electric bell, motor, generator, loudspeaker, electromagnet for lifting scrap.
