Electricity MCQs

1. What is the unit of electric current?

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

2. What causes electrons to drift in a conductor?

   - A) Thermal energy
   - B) Magnetic field
   - C) Electric field
   - D) Light energy

3. What is the drift velocity?

   - A) The velocity of light in the conductor
   - B) The velocity with which free electrons move towards the positive terminal
   - C) The velocity of sound in the conductor
   - D) The random velocity of electrons

4. Which of the following defines current density?

   - A) $J = nAe$
   - B) $J = \sigma E$
   - C) $J = I/A$
   - D) $J = E/\rho$

5. According to Ohm’s law, which of the following is true?

   - A) $V = IR$
   - B) $I = VR$
   - C) $R = VI$
   - D) $V = I/R$

6. What is the unit of conductance?

   - A) Ohm
   - B) Siemens
   - C) Farad
   - D) Henry

7. Which material has the highest resistivity?

- A) Copper
- B) Silicon
- C) Wood
- D) Aluminium

8. What is the critical temperature in superconductivity?

   - A) The temperature at which resistivity becomes maximum
   - B) The temperature at which resistivity drops to zero
   - C) The temperature at which a material becomes an insulator
   - D) The temperature at which thermal conductivity is highest

9. What is the force experienced by an electron in an electric field E?

   - A) F = eE
   - B) F = E/e
   - C) F = E^2/e
   - D) F = e^2E

10. What is the average time between two successive collisions of electrons called?

    - A) Drift time
    - B) Relaxation time
    - C) Collision time
    - D) Conduction time

11. What is the relation between the number of conduction electrons (n), length of the conductor (L), and the cross-sectional area (A)?

    - A) nAL
    - B) nL/A
    - C) n/A
    - D) nL^2

12. Which theory explains superconductivity?

    - A) Quantum theory
    - B) BCS theory
    - C) Kinetic theory
    - D) Atomic theory

13. What is the primary application of superconducting magnets?

    - A) Levitation of trains
    - B) Generation of solar energy
    - C) Increasing thermal conductivity
    - D) Enhancing sound propagation

14. What is the symbol for resistivity?

    - A) σ

- B) ρ
- C) λ
- D) μ

15. What is the relation between current (I), charge (q), and time (t)?

    - A) I = qt
    - B) I = q/t
    - C) I = q + t
    - D) I = q - t

Answer Key

1. C) Ampere
2. C) Electric field
3. B) The velocity with which free electrons move towards the positive terminal
4. C) J = I/A
5. A) V = IR
6. B) Siemens
7. C) Wood
8. B) The temperature at which resistivity drops to zero
9. A) F = eE
10. B) Relaxation time
11. A) nAL
12. B) BCS theory
13. A) Levitation of trains
14. B) ρ
15. B) I = q/t