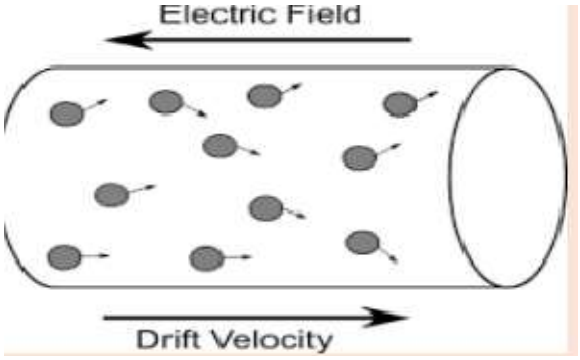
CLASS: 12th CBT AUGUST PHYSICS

Questions 1 to 3

Drift velocity is the average velocity of electrons in a conductor material due to an electric field. In a conducting material, it is also proportional to the magnitude of an external electric field.



1. The drift velocity of electrons in a conductor is 0.8 mm/s. The potential difference across a conducting wire is doubled keeping other factors constant. What is the value of new drift velocity?

(a) 0.4mm/s (b) 0.64 mm/s (c) 1.6 mm/s (d) 0.2 mm/s

Answer: (c) 1.6 mm/s

2. How would be the current density of a conductor get affected when the potential difference is tripled keeping other factors constant.

(a) doubled (b) halved (c) no change (d) tripled

Answer: (d) tripled

3. Two conducting wires of the same material, radii in the ratio 1:2 and lengths in the ratio 2:3 are connected in series to a battery of emf 5V. What is the ratio of the drift velocities of electrons in the two wires?

(a) 4:1 (b) 1:3 (c) 2:3 (d) 4:3

Answer: (a) 4:1

Questions 4 to 6

Moving coil galvanometer operates on Permanent Magnet Moving Coil (PMMC) mechanism and was designed by the scientist Darsonval. Its working is based on the fact that when a current carrying coil is placed in a magnetic field, it experiences a torque. This torque tends to rotate the coil about its axis of suspension in such a way that the magnetic flux passing through the coil is maximum.

The current sensitivity of a moving coil galvanometer is defined as the deflection produced per unit of current flowing through the coil.

The voltage sensitivity of a moving coil galvanometer is defined as the deflection produced per unit voltage.

4. To increase the current sensitivity of a moving coil galvanometer, we should decrease

(a) strength of magnet **(b) torsional constant of spring**

(c) number of turns in coil **(d) area of coil**

Answer: (b) torsional constant of spring

5. To make the field radial in a moving coil galvanometer.

(a) number of turns of coil is kept small

(b) magnet is taken in the form of horse-shoe

(c) poles are of very strong magnets

(d) poles are cylindrically cut

Answer: (d) poles are cylindrically cut

6. A galvanometer of resistance 100 Ω is converted to a voltmeter of range 10 V by connecting a resistance of 10 kΩ. The resistance required to convert the same galvanometer to an ammeter of range 1 A is:

(a) 0.4 Ω **(b) 0.3 Ω** **(c) 1.2 Ω** **(d) 0.1 Ω**

Answer: (d) 0.1 Ω

7. The magnetic dipole moment of a revolving electron is.

(a) ½ evr **(b) 2ev/r** **(c) 2er/v** **(d) 2rv/e**

Answer: a) ½ evr

8. A negative charge, such as an electron, enters a uniform magnetic field B directed into the page with an initial velocity v along right. What is the initial direction of the magnetic force on the electron?

(a) out of the page **(b) downwards** **(c) to the right** **(d) upward**

Answer: (b) downwards

9. The magnetic field inside the solenoid is:

(a) Non-Uniform and parallel to the axis **(b) Uniform and parallel to the axis**

(c) Non-uniform and perpendicular to the axis **(d) Uniform and perpendicular to the axis**

Answer: (b) Uniform and parallel to the axis

10. Susceptibility is positive for

(a) Ferromagnetic **(b) Paramagnetic** **(c) Diamagnetic** **(d) Option (a) and (b)**

Answer: (d) Option (a) and (b)