



# B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS  
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL



## PERIODIC TEST-1

### PHYSICS (SET-2)

**Class: XII**

**Date: 10.06.26**

**Admission no:**

**Time: 1hr**

**Max Marks: 25**

**Roll no:**

#### General Instructions:

- There are three sections A, B, and C with 13 questions in total, Section A has 5 Multiple Choice Questions of one mark each, Section B has 4 questions of two marks each and Section C has 4 questions of three marks each.
- All questions are compulsory.
- Calculators are not allowed.

### SECTION A

- The number of electrons passing through a conductor in 2 minutes when current is 160 mA is:  
(a)  $1.2 \times 10^{19}$       (b)  $3.2 \times 10^{19}$       (c)  $1.92 \times 10^{20}$       (d)  $6.4 \times 10^{19}$
- The direction of drift velocity of electrons in a conductor is:  
(a) Same as conventional current      (b) Opposite to conventional current  
(c) Perpendicular to current      (d) Random
- SI unit of magnetic field is:  
(a) Weber      (b) Tesla      (c) Henry      (d) Volt
- The magnetic force on a charge moving parallel to a magnetic field is:  
(a) Maximum      (b) Zero      (c) Minimum but not zero      (d) Infinite
- Which particle experiences greater force in a magnetic field if both have same velocity?  
(i) Proton      (ii) Electron  
(a) Proton      (b) Electron      (c) Both experience same force      (d) None

### SECTION B (2 marks each)

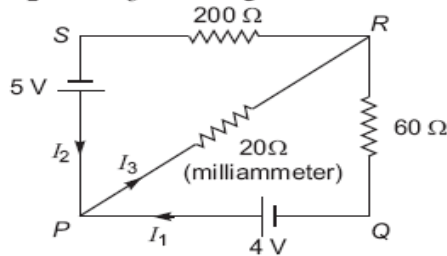
- Why are copper wires preferred over iron wires for household wiring? Give two reasons.
- Two cells of emf 12 V ( $r = 1 \Omega$ ) and 8 V ( $r = 3 \Omega$ ) are connected in opposition. Calculate the current in the circuit.

8. Define one ampere using the force between two parallel current-carrying conductors.
9. Draw and explain the path of a positively and negatively charged particle entering a uniform magnetic field perpendicular to its velocity.

**SECTION C (3 marks each)**

10. An ammeter of resistance  $1 \Omega$  can measure up to  $2 \text{ A}$ . Calculate:
  - (i) The value of shunt required to extend range to  $10 \text{ A}$
  - (ii) Effective resistance of the combination
11. Using Ampere's circuital law, derive the expression for the magnetic field inside a long solenoid.
12. Two wires of same material and length have cross-sectional areas in ratio  $3:1$ . They are connected:
  - (i) In series      (ii) In parallel
 Compare drift velocities in both cases.

13. State Kirchhoff's rules. Apply these rules to the loops  $PRSP$  and  $PRQP$  to write the expressions for the currents  $I_1$ ,  $I_2$  and  $I_3$  in the given circuit.



----- **BEST OF LUCK** -----