BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 12

Current Electricity

Physics · Chapter 3 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE	TOTAL MARKS	DURATION	MARKING	TARGET
_____	30	75 min	As per board	⩾ 24/30

GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Section A has 1-mark MCQs/very-short-answers; Section B has 2-mark short answers; Section C has 3-mark short-long; Section D has a 5-mark long-answer including numerical.
3. Use a non-programmable calculator only if required.
4. Draw neat, labelled diagrams where asked.
5. Internal choice is given in Section D.

Section A — Very Short Answer (1 mark each) — 5 MARKS · 10 MIN

Q1. Define drift velocity of electrons. [PYQ 2019 Delhi] **[1 mark]**

Q2. State Ohm's law. [PYQ 2018 Delhi] **[1 mark]**

Q3. Write the SI unit of resistivity. [PYQ 2020 Outside Delhi] **[1 mark]**

Q4. Why is a potentiometer preferred over a voltmeter to measure EMF? [PYQ 2022 Delhi] **[1 mark]**

Q5. What is the principle on which Kirchhoff's loop rule is based? [PYQ 2023 Delhi] **[1 mark]**

Section B — Short Answer (2 marks each) — 6 MARKS · 15 MIN

Q6. A cell of EMF 12 V and internal resistance 1 Ohm is connected to an external resistor of 5 Ohm. Find the current and terminal voltage. [PYQ 2021 Delhi] **[2 marks]**

Q7. Two resistors of 4 Ohm and 12 Ohm are connected in parallel. Find the equivalent resistance. [PYQ 2020 Outside Delhi] **[2 marks]**

Q8. Distinguish between EMF and terminal voltage of a cell. [PYQ 2019 Delhi] **[2 marks]**

Section C — Short-Long Answer (3 marks each) — 9 MARKS · 22 MIN

Q9. Derive an expression for the drift velocity of free electrons in a conductor under an applied electric field E. Hence write the relation I = neAv_d. [PYQ 2022 Delhi] **[3 marks]**

Q10. Using Kirchhoff's laws, derive the balance condition of a Wheatstone bridge. Draw the labelled circuit. [PYQ 2023 Outside Delhi] **[3 marks]**

Q11. Two cells of EMFs epsilon_1, epsilon_2 and internal resistances r_1, r_2 are connected in parallel. Derive expressions for the equivalent EMF and internal resistance. [PYQ 2020 Delhi] **[3 marks]**

Section D — Long Answer (5 marks; internal choice) — 10 MARKS · 28 MIN

Q12. (a) State Kirchhoff's junction and loop rules. (b) Three resistors 2 Ohm, 4 Ohm and 6 Ohm are connected in series across a 24 V battery with internal resistance 0 Ohm. Calculate (i) current, (ii) potential drop across each resistor, (iii) power dissipated in the 4 Ohm resistor. [PYQ 2024 Delhi] **[5 marks]**

Q13. OR (a) Explain the principle of a potentiometer. (b) Why is potentiometer preferred over a voltmeter for measuring EMF? (c) A potentiometer wire of length 10 m has a resistance of 20 Ohm. A 4 V battery of negligible internal resistance is connected across it. A cell of unknown EMF balances at 250 cm. Find the EMF. [PYQ 2024 Outside Delhi] **[5 marks]**

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers · readyforboards.com · +91 70330 05444