BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 12

Electrochemistry

Chemistry · Chapter 2 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE	TOTAL MARKS	DURATION	MARKING	TARGET
_____	30	60 min	As per board	≥ 24/30

GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Marks shown in brackets.
3. Use F = 96500 C/mol unless otherwise specified.
4. Show all working for numericals.
5. Internal choices NOT provided.

Section A — MCQ (1 mark each, 6 Qs) — 6 MARKS · 10 MIN

Q1. Standard hydrogen electrode E° = ____ V (by convention). *[PYQ 2018 Delhi]* **[1 mark]**

Q2. Faraday constant F = ____ C/mol. *[PYQ 2019 All India]* **[1 mark]**

Q3. Nernst equation at 298K: E = E° − ____ × log Q. *[PYQ 2020 Delhi]* **[1 mark]**

Q4. Anode in a galvanic cell is the site of ____ . *[PYQ 2018 Outside Delhi]* **[1 mark]**

Q5. Molar conductivity Λ_m with concentration: ____ (increases / decreases). *[PYQ 2022 Delhi]* **[1 mark]**

Q6. Kohlrausch's law: Λ°_m = ____ + ____ (in symbols). *[PYQ 2020 Outside Delhi]* **[1 mark]**

Section B — Very Short Answer (2 marks each, 4 Qs) — 8 MARKS · 15 MIN

Q7. Distinguish between galvanic and electrolytic cells. *[PYQ 2018 Delhi]* **[2 marks]**

Q8. Write Nernst equation for the cell Zn(s) | $Zn^{2+}(c_1)$ || $Cu^{2+}(c_2)$ | Cu(s) at 298K. *[PYQ 2019 Delhi]* **[2 marks]**

Q9. How many coulombs are needed to deposit 1 mole of aluminium ($Al^{3+} + 3e^- \rightarrow Al$)? *[PYQ 2020 All India]* **[2 marks]**

Q10. What is the cell notation for a galvanic cell with Zn as anode and Cu as cathode in 1M solutions? *[PYQ 2022 Delhi]* **[2 marks]**

Section C — Short Answer (3 marks each, 3 Qs) — 9 MARKS · 20 MIN

Q11. Derive the Nernst equation at 298K for a half-cell reaction. *[PYQ 2019 Delhi]* **[3 marks]**

Q12. Given E°_Ni^{2+}/Ni = −0.25V and E°_Cu^{2+}/Cu = +0.34V, identify cathode + anode + compute E°_cell + write cell notation. *[PYQ 2020 Delhi]* **[3 marks]**

Q13. Explain how Kohlrausch's law can be used to find Λ°_m of weak electrolyte CH_3COOH from data on strong electrolytes. *[PYQ 2023 Standard]* **[3 marks]**

Section D — Long Answer (4 marks each, 2 Qs) — 7 MARKS · 15 MIN

Q14. (a) State Faraday's two laws of electrolysis. (b) Calculate the mass of copper deposited when 0.5 A current is passed through a $CuSO_4$ solution for 1 hour. (Atomic mass of Cu = 63.5 g/mol) *[PYQ 2024 Standard]* **[4 marks]**

Q15. Case study: Corrosion of iron causes losses of nearly 2-3% of global GDP annually. (a) Describe the electrochemical mechanism of rusting. (b) State THREE methods for preventing corrosion, with the principle behind each. *[PYQ 2024 Standard Set 2]* **[3 marks]**

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