



C23-A/AA/C/M/MET/MNG/MRAC-104

23013

BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2025

FIRST YEAR (COMMON) EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Write the electronic configuration of (i) Fluorine (ii) Sulphur and (iii) Copper.
2. State and explain Hund's principle with an example.
3. Define pH. Calculate the pH of 0.01 HCl solution.
4. Calculate the equivalent weight of (i) H_2SO_4 (ii) NaOH (iii) Na_2CO_3 .
5. Write any three differences between metallic conduction and electrolytic conduction.
6. Write a short note on stress cell.
7. Mention the disadvantages of using hard water in industries.

8. Write the composition and application of Nichrome.
9. Write any three advantages of hydrogen gas as a fuel.
10. Define the terms (i) DO, (ii) BOD, and (iii) COD.

PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. What are quantum numbers? Explain the signification of quantum numbers. 10
12. Define Molarity and Normality. Find the molarity and normality of 9.8 grams of H_2SO_4 present in 500ml of solution. 10
13. (a) Define covalent bond and explain the formation of covalent bond in O_2 molecule by Lewis dot method. 5
(b) Define Arrhenius acid and base. Give two examples for each. 5
14. (a) Define galvanic cell. Explain the construction and working of galvanic cell with a neat diagram. 6
(b) Define battery and list the types of batteries with example. 4

15. (a) Explain the mechanism of rusting of iron with chemical equations. 5
(b) Write a short note on impressed voltage method of prevention of corrosion. 5
16. Calculate the temporary, permanent and total hardness of water containing the following salts :
CaSO₄= 13.6mg/lit, Mg(HCO₃)₂=7.3 mg/lit,
Ca((HCO₃)₂= 16.2 mg/lit, MgCl₂=9.5 mg/lit. 10
17. (a) Explain the preparation and uses of (i) PVC (ii) Polystyrene. 6
(b) Define elastomers. Write a method of preparation and any two applications of neoprene. 4
18. (a) Define e-pollution. State the sources and controlling methods of e-pollution. 6
(b) Write a short note on deforestation. 4

★ ★ ★