23016

C-23-COMMON–104

23013

BOARD DIPLOMA EXAMINATION, (C-23)

OCTOBER/NOVEMBER—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. State and explain Pauli's exclusion principle.

2. Define Covalent Bond. Write Lewis dot method for the formation of N_2 molecule.

3. Define solvent, solute and solution.

4. How much quantity of water is required for dilution of 500 ml of 3M HCl is diluted to 1 Molar HCl?

5. Write any three differences between metallic conduction and electrolytic conduction.

6. Write a short note on stress cell.

7. What is Reverse Osmosis? Write any two advantages of it.

8. Write the composition and two uses of Nichrome.

9. Write the composition and two uses of Biogas.

10. What are producers and consumers? Give examples.

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 their significance. 2+8=10

12. Explain the Arrhenius theory of Acids and Bases. Write its limitations. 7+3

13. *(a)* State the postulates of electronic theory of valency. 5

(b) Define molarity and normality. Write their units. Calculate the molarity of 5.3 grams of Na_2CO_3 is dissolved in 100ml solution. 5

14. Define battery. Explain the construction and working of lead-storage battery. 2+8

15. *(a)* Define the term 'corrosion'. State the factors that influencing the rate of corrosion. 2+4

(b) Explain sacrificial anode method for prevention of corrosion of iron metal. 4

16. *(a)* Explain the softening of hard water by ion-exchange process. 6

(b) State any four disadvantages of using hard water. 4

17. *(a)* Define Elastomers. Write the composition and applications of Buna-S. 2+4

(b) Write the differences between addition polymerization and condensation polymerization. 4

18. Define water pollution. Explain any four causes and four control methods of water pollution. 2+4+4

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