



C14-A/AA/AEI/BM/CHST/C/CM/EC/EE/CHPP/  
CHPC/CH/OT/PET/M/RAC/  
MET/MNG/IT/TT-104

**4004**

**BOARD DIPLOMA EXAMINATION, (C-14)**

**OCT/NOV—2017**

**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 chlorine, chromium and copper.
2. Write a brief note on metallic bond.
3. Define equivalent weight. Calculate equivalent weight of  $H_2SO_4$ .
4. Define buffer solution and write the importance of buffer solutions.
5. Distinguish between electrolytic cell and galvanic cell.
6. Define temporary hardness and permanent hardness.
7. Write the disadvantages of plastics.

8. Define fuel. State the composition of water gas.
9. What are primary pollutants and secondary pollutants? Give examples.
10. State the types of energy sources available. 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 criterion for valuation is the content but not the length of the answer.

11. (a) Explain the following : 6  
 (i) Aufbau principle  
 (ii) Hund's rule  
 (iii) Pauli's exclusion principle
- (b) Calculate the oxidation state of N in (HNO<sub>3</sub>) and Cr in K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>. 4
12. (a) Define normality. Calculate the normality of 20 ml of NaOH that exactly neutralizes the 50 ml of 0.02 N H<sub>2</sub>SO<sub>4</sub>. 5
- (b) Define pH. Calculate the pH of 0.001 M NaOH solution. 5
13. (a) Write the differences between metals and non-metals. 5
- (b) Explain froth flotation process. 5
14. (a) What is electrolysis? Write Faraday's laws of electrolysis. 5
- (b) Explain Arrhenius theory of electrolytic dissociation. 5
15. (a) What is rusting? Explain the mechanism of rusting of iron with chemical equation. 5
- (b) Explain the factors influencing the rate of corrosion. 5

16. (a) Explain the <sup>\*</sup>ion-exchange process of softening of hard water. 6
- (b) Define soft and hard water and state any two disadvantages of hard water. 4
17. Explain the preparations and two uses of the following : 10
- (a) Polythene
- (b) PVC
- (c) Polystyrene
- (d) Teflon
18. (a) Write the controlling methods of water pollution. 5
- (b) Explain the threats to biodiversity. 5

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