



C16-C/CM-104

6019

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2018

DCE—FIRST YEAR 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. What are fundamental particles? How many electrons, protons and neutrons are present in Mg?
2. Define orbital. Draw the shapes of *d*-orbitals.
3. Define mole. Calculate the number of moles present in 3.65 g of HCl.
4. Define buffer solution. Write any three applications.
5. Define chemical equivalent and electrochemical equivalent. Mention the relation between these two.
6. Write essential qualities of drinking water.
7. Write preparation and uses of (a) PVC (polyvinyl chloride) and (b) Teflon.

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8. Define fuel. Write any four characteristics of good fuels.
9. Define (a) COD, (b) BOD and (c) Dissolved Oxygen.
10. State any three causes of water pollution.

**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) Write postulates of Bohr's theory. 5
- (b) Write the differences between ionic compounds and covalent compounds. 5
12. (a) Explain equivalent weight of acids and bases with examples. 5
- (b) Explain Brönsted-Lowry theory of acids and bases. 5
13. (a) Explain froth flotation process. 5
- (b) Explain the following terms with suitable examples : 5
- (i) Roasting
- (ii) Calcination
14. (a) State and explain Faraday's first law and second law. 6
- (b) Calculate the e.m.f. of the cell  $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$ . Given  $E_{\text{Zn}^{2+}|\text{Zn}}^{\circ} = 0.76 \text{ V}$ ,  $E_{\text{Cu}^{2+}|\text{Cu}}^{\circ} = 0.34 \text{ V}$ . 4
15. (a) Define corrosion. State the factors that influence the rate of corrosion. 6
- (b) Explain prevention of corrosion by impressed voltage method. 4

- 16.** (a) Write the <sup>\*</sup>disadvantages of using hard water in industries. 5  
(b) Describe permutite process for softening of hard water with a neat diagram. 5
- 17.** (a) Explain the condensation polymerization with an example. 5  
(b) Explain vulcanization of rubber with chemical equation. 5
- 18.** Explain briefly : 4+3+3  
(a) Greenhouse effect  
(b) Acid rain  
(c) Ozone layer depletion

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