



C14-C-104/C14-CM-104

4017

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2016

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.

1. Draw the shapes of *s* and *p* orbitals.
2. Define (a) metallic bond and (b) covalent bond.
3. Calculate the equivalent weight of KOH and Na<sub>2</sub>CO<sub>3</sub>.
4. Define buffer solutions. State any two uses of buffer solutions.
5. State Faraday's laws of electrolysis.
6. State the salts responsible for hardness.
7. Explain the addition polymerization with an example.
8. Define 'fuel'. Write any two characteristics of good fuel.
9. Define the terms (a) air pollution and (b) biodiversity.
10. Write any three causes of water pollution.

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**PART—B**

10×5=50

**Instructions** : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

- 11.** (a) What are quantum numbers? Explain the significance of quantum numbers. 6  
(b) Calculate the oxidation number of Mn in  $\text{KMnO}_4$  and S in  $\text{H}_2\text{SO}_4$ . 4
- 12.** (a) Explain the Arrhenius theory of acids and bases. 5  
(b) Define molarity. Calculate the molarity of a solution prepared by dissolving 5.3 gm of  $\text{Na}_2\text{CO}_3$  in 250 ml of water. 5
- 13.** (a) Write any five differences between electrolytic cell and galvanic cell. 5  
(b) What is electrochemical series? Mention its significance. 5
- 14.** (a) Discuss about roasting and calcination with examples. 6  
(b) Write the composition and uses of German silver and brass. 4
- 15.** (a) Define corrosion. Explain any five factors which influences the rate of corrosion. 6  
(b) Explain the sacrificial anode process. 4
- 16.** (a) Explain the softening of water by permutit process. 6  
(b) Define osmosis and reverse osmosis. 4
- 17.** (a) Explain vulcanization of rubber with chemical equations. 4  
(b) Write the preparation and uses of (i) polythene, (ii) PVC and (iii) polystyrene. 6
- 18.** (a) State and explain the causes of air pollution. 6  
(b) Discuss the effects of deforestation. 4

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