



C14-C/CM-104

4017

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2017

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. Write three differences between oxidation number and valency.
2. Write the electronic configurations of the following elements :
  - (a) Chlorine
  - (b) Chromium
  - (c) Copper
3. Define equivalent weight of a base. Give an example.
4. Define Lewis acid and base. Give one example for each.
5. Write any three differences between electrolytic cell and galvanic cell.
6. Define soft water and hard water.

7. List any three characteristics of plastics.
8. Classify the fuels based on physical state. Give examples.
9. Define (a) pollutant, (b) contaminant and (c) sink.
10. Write a short note on ozone layer depletion.

**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) Define ionic bond. Explain ionic bond formation in Magnesium Oxide (MgO). 6  
 (b) Define orbital. Draw the shapes of S and P orbitals. 4
12. (a) Define normality. Calculate the normality of a solution containing 4.9 gms. of H<sub>2</sub>SO<sub>4</sub> in 200 ml solution. 5  
 (b) Define buffer solution. Write any three applications of buffer solution. 5
13. (a) Describe froth floatation process. 5  
 (b) What is electrolytic refining? Explain it with an example. 5
14. (a) Define Faraday's second law. An equal amount of current is passed through AgNO<sub>3</sub> and CuSO<sub>4</sub> solutions, deposited 31.75 gms of copper at the electrodes. Find the weight of the silver deposited. (atomic weights of Cu=63.5, Ag=108) 6  
 (b) Define electrochemical series. What is its significance? 4

15. (a) Describe the formation of composition cell with an example. 4  
(b) Write any six factors influencing the rate of corrosion. 6
16. (a) Explain permutite process of softening of hard water. 6  
(b) Define osmosis and reverse osmosis. 4
17. (a) Give method of preparations and *two* uses of the following synthetic rubbers : 6  
(i) Butyl rubber  
(ii) Buna-S  
(iii) Neoprene rubber  
(b) Write any four characteristics of vulcanised rubber. 4
18. (a) State the different types of energy sources with examples. 4  
(b) Explain (i) producers, (ii) consumers and (iii) decomposers. 6

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