



C16-EE/CHPP/-104

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BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER—2020

DEEE—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY & 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 the following elements :

(a) Sodium(Na)

(b) Chromium(Cr)

(c) Copper(Cu)

2. Distinguish between oxidation number and valency.

3. Define the terms :

(a) Solute

(b) Solvent

(c) Solution

4. What is a buffer solution? Write any two applications of it.

5. Define electrolysis. Write the chemical equations at cathode and anode during electrolysis of fused NaCl.

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6. Define soft <sup>\*</sup> water and hard water with examples.
7. Write any three characteristics of plastics.
8. Define a fuel. Write any four characteristics of a good fuel.
9. Explain renewable energy sources and non-renewable energy sources with suitable examples.
10. Write any three effects of water pollution on living things.

**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 are the content but not the length of the answer.

11. (a) Briefly explain four quantum numbers. 6  
 (b) Write any four differences between properties of ionic compounds and covalent compounds. 4
12. (a) Define molarity. Calculate the weight of  $\text{Na}_2\text{CO}_3$  required to prepare 0.05 M sodium carbonate solution in 250 ml volumetric flask. 5  
 (b) Describe Lewis theory of acids and bases with suitable examples. 5
13. (a) What is an alloy? Write the composition and uses of Brass and German silver. 5  
 (b) Explain electrolytic refining process for purification of copper metal. 5
14. (a) State and explain faraday's laws of electrolysis. 6  
 (b) What is E.M.F. of a galvanic cell? The standard reduction potentials of zinc electrode and copper electrode are  $-0.76$  V and  $+0.34$  V respectively. Find the standard E.M.F. of the cell.  $\text{Zn}/\text{Zn}^{2+}(1\text{M})//\text{Cu}^{2+}(1\text{M})/\text{Cu}$ . 4

- 15.** (a) Explain <sup>\*</sup> composition cell and stress cell during corrosion. 4  
(b) Describe sacrificial anode method for prevention of corrosion. 6
- 16.** (a) What is reverse osmosis? Write the applications of reverse osmosis. 6  
(b) What are the disadvantages of using hard water in industries. 4
- 17.** (a) Define and explain vulcanization of natural rubber. 5  
(b) Write any five differences between thermoplastics and thermosetting plastics. 5
- 18.** (a) Define air pollution. Explain control methods of air pollution. 6  
(b) Write a short note on Ozone layer depletion. 4

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