



C-14-CHPP/EE-104

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BOARD DIPLOMA EXAMINATION, (C-14)

APRIL/MAY—2015

DEEE—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. Distinguish between orbit and orbital.
2. Find the atomic number ( $Z$ ) and mass number ( $A$ ) of an element having 11 protons and 12 neutrons in its nucleus.
3. Define saturated, unsaturated and supersaturated solutions.
4. What is conjugate acid-base pair? Explain with an example.
5. Define the terms (a) conductor, (b) insulator and (c) electrolyte.
6. List out any three chemical compounds (with formula), causing hardness of water.
7. What are the advantages of plastics over traditional materials? (Any three)
8. State the composition and uses of water gas.
9. Define the terms (a) dissolved oxygen, (b) particulate and (c) sink.
10. Write a brief note on acid rain.

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**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 the properties of covalent compounds. 6  
(b) Explain the metallic bond with electron sea model theory. 4
- 12.** (a) Define molarity. Calculate the weight of acetic acid (CH<sub>3</sub>COOH) required to prepare two liters of 0.1 M solution. 5  
(b) Explain Lewis theory of acids and bases. 5
- 13.** (a) State any six differences between metals and non-metals. 6  
(b) Describe calcination and roasting with examples. 4
- 14.** (a) Explain the construction and working of galvanic cell. 6  
(b) Define chemical equivalent and electrochemical equivalent. How are they related? 4
- 15.** (a) Explain the mechanism of rusting of iron. 5  
(b) Explain sacrificial anode method of prevention of corrosion. 5
- 16.** (a) Explain ion-exchange process of softening of hard water. 7  
(b) Define degree of hardness. Give its units. 3
- 17.** (a) Define and explain addition polymerization and condensation polymerization with an example for each. 6  
(b) Write any four differences between thermoplastics and thermosetting plastics. 4
- 18.** (a) Define the terms (i) producers and (ii) consumers. Give examples. 4  
(b) Explain the causes of water pollution. 6

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