



c09-c-104

**3014**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**MARCH/APRIL—2014**

**DCE—FIRST YEAR EXAMINATION**

**ENGINEERING CHEMISTRY AND  
ENVIRONMENTAL STUDIES**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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. State any three differences between an orbit and an orbital.
2. Calculate the oxidation number of N in  $\text{HNO}_3$  and  $\text{NH}_3$ .
3. Define the terms 'solution', 'solute' and 'solvent'.
4. What is conjugate acid-base pair? Explain with an example.
5. List out any three differences between an electrolytic cell and galvanic cell.
6. State any three essential qualities of drinking water.
7. Write the chemical equation of formation of polyethylene.
8. Write any three characteristics of a good fuel.
9. Define producers, consumers and decomposers.
10. What are the primary pollutants and secondary pollutants? Give examples.

**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 postulates of Bohr's atomic theory. 8  
(b) Draw the shapes of s and p orbitals. 2
- 12.** (a) Find the molarity of solution containing 21.2 gm of  $\text{Na}_2\text{CO}_3$  in 500 ml. 4  
(b) State and explain briefly Arrhenius theory of acids and bases. 6
- 13.** (a) Explain froth floatation process of concentration of ore. 6  
(b) Give the composition and uses of brass and German silver. 4
- 14.** (a) State and explain Faraday's laws of electrolysis. 6  
(b) The electrochemical equivalent of a metal is 0.00028 gm/coloumb. Calculate the weight of metal deposited by the passage of 10 amperes of current for 10 minutes. 4
- 15.** (a) What is rusting? Explain the mechanism of rusting of iron with chemical equations. 5  
(b) Explain sacrificial anode process of prevention of corrosion. 5
- 16.** (a) What is the difference between temporary hardness and permanent hardness of water? 4  
(b) Explain briefly permutate process of softening hard water. 6
- 17.** (a) Write any four differences between thermoplastics and thermosetting plastics. 4  
(b) What is vulcanization? Explain with equations. 6
- 18.** (a) Explain the effects of water pollution on living organisms. 6  
(b) Write a note on greenhouse effect. 4

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