

C14-EC/CHPC/PET-104

4036

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV—2015

DECE—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.~~ Draw the shapes of *s* and *d* orbitals.

2. Write any three properties of ionic compounds.

3. Define mole. Calculate the number of moles present in one kilogram of  $\text{CaCO}_3$ .

4. What is conjugate acid-base pair? Give an example.

5. Explain Faraday's second law of electrolysis.

6. Define reverse osmosis and write two of its advantages.

7. Write a method of preparation of polyvinyl chloride (PVC). Give chemical equation.

8. Define fuel. Classify the fuels based on their occurrence

~~9.~~ Write a note on acid rains.

10. Define the terms (a) producers, (b) consumers and (c) decomposers.

**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 significance of quantum numbers. 6  
(b) Explain the formation of covalent bond in hydrogen and oxygen molecules using Lewis dot model.
12. (a) Define molarity. Calculate the volume of water to be added to 250 ml of 0.5 M  $\text{Na}_2\text{CO}_3$  solution to get 0.01 M  $\text{Na}_2\text{CO}_3$  solution. 5  
(b) Explain Arrhenius acid base theory. 5
13. (a) Explain froth floatation process of concentration of ore. 6  
(b) Give the composition and two uses each of the following alloys : 4  
(i) Brass  
(ii) Nichrome
14. (a) A current of 0.5 amp is passed through molten  $\text{AlCl}_3$  for 96.5 seconds. Calculate the mass of aluminum deposited on the cathode (At. wt. of Al = 27) 5  
(b) Write any five differences between electrolytic cell and galvanic cell. 5
15. (a) Explain any five factors influencing the rate of corrosion. 5  
(b) Describe sacrificial anode method of prevention of corrosion. 5
16. (a) Explain ion-exchange method of softening of hard water. 6  
(b) List the chemical compounds with their formulae, which causes hardness. 4
17. (a) What is addition and condensation polymerization? Explain with examples. 6  
(b) Explain the process of vulcanization of rubber. 4
18. (a) State and explain any three control methods of air pollution. 6  
(b) Write a note on ozone layer depletion. 4

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