



C09-A-104/C09-AA-104/C09-AEI-104/C09-BM-104/  
C09-C-104/C09-CM-104/C09-CHPP-104/C09-CHPC-104/  
C09-CHOT-104/C09-CHST-104/C09-EC-104/C09-EE-104/  
C09-IT-104/C09-M-104/C09-MET-104/C09-MNG-104/  
C09-PET-104/C09-TT-104/C09-RAC-**104**

**3004**

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

**OCT/NOV—2016**

**FIRST YEAR (COMMON) 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 the electronic configuration of chromium and aluminium.
2. Calculate the oxidation number of P in  $\text{H}_3\text{PO}_4$ ,  $\text{H}_2\text{PO}_3$  and  $\text{P}_2\text{O}_5$ .
3. Define solute, solvent and solution.
4. Calculate the pH of 0.0005 M  $\text{H}_2\text{SO}_4$  solution.
5. Define the terms (a) electrolytes, (b) non-electrolytes and (c) electrolysis.

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6. What are the essential characteristics of drinking water?
7. Give the preparation and uses of PVC.
8. Give the composition and uses of biogas and natural gas.
9. Write a note on greenhouse effect.
10. Explain any two controlling methods of air pollution.

**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 the valuation is the content but not the length of the answer.

11. (a) Write the postulates of Bohr's atomic model. What are their limitations? 6
- (b) Give the differences between the ionic compounds and covalent compounds. 4
12. (a) 12.6 grams of oxalic acid (mol. weight 126) is dissolved in 2 litres of solution. Calculate the normality and molarity of the solution. 5
- (b) Define buffer solution. What are different types of buffer? Give examples. 5
13. (a) Define mineral, ore, flux and gangue. 4
- (b) Explain the purification of a metal by electrolytic refining. 6
14. (a) State and explain Faraday's laws of electrolysis. 6
- (b) When same quantity of current is passed through the copper and silver voltmeters connected in series, 0.35 gram of copper is deposited in copper voltmeter. What is the weight of silver deposited in silver voltmeter (at. wt. of Cu 63.5 and at. wt. of Ag 108)? 4

- 15.** Define corrosion. Explain the prevention of corrosion by  
(a) sacrificial anode method and (b) impressed voltage method. 2+8
- 16.** (a) Describe the softening hard water by Permutit method. 6  
(b) Write the disadvantages of hard water using in industries. 4
- 17.** (a) Define the term 'plastic'. What are the characteristics of plastic? 4  
(b) Give the differences between the thermoplastics and thermosetting plastics. 6
- 18.** (a) Explain the causes of water pollution. 5  
(b) What are renewable and non-renewable energy sources? Give examples. 5

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