



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—2018  
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 Cr, Fe and Zn.
2. What is covalent bond? Explain the formation of H<sub>2</sub> molecule.
3. What is meant by unsaturated, saturated and supersaturated solutions?
4. Define ionic product of water. State its value at 0 °C.

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5. What are <sup>\*</sup>electrolytes and nonelectrolytes? Give examples.
6. Write any three disadvantages of using hard water in industries.
7. Write the disadvantages of plastics.
8. Define the terms hydrosphere, atmosphere and biosphere.
9. Write the composition and uses of water gas and biogas.
10. Define (a) pollutant, (b) BOD, and (c) COD.

**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) Explain Pauli's exclusion principle, Aufbau rule and Hund's rule with examples. 6
- (b) Calculate the oxidation number of Cr in  $K_2Cr_2O_7$  and  $K_2CrO_4$ . 4
- \* 12. (a) What is meant by equivalent weight? Calculate the equivalent weight of  $H_2C_2O_4$ ,  $2H_2O$  and  $Na_2CO_3$ . 5
- (b) Write the postulates and limitations of Lewis theory of acids and bases. 5
13. (a) State and explain Faraday's laws of electrolysis. A current of 3 ampere current passing through silver nitrate solution for 20 minutes deposited 4 gms of silver. What is the electrochemical equivalent of copper? 7
- (b) Derive the relation between  $e$  and  $E$ . 3

- 14.** (a) Define the terms (i) mineral, (ii) ore, (iii) gangue, (iv) flux, and (v) slag. 5
- (b) Write a short note on froth floatation process. 5
- 15.** Explain how the corrosion of a metal can be prevented by (a) sacrificial anodic method, and (b) impressed voltage method. 10
- 16.** (a) Describe the treatment of municipal water with a neat flow diagram. 6
- (b) Write any four essential qualities of drinking water. 4
- 17.** (a) What is meant by vulcanization of rubber. Explain with chemical equations. 6
- (b) Write the properties of plastics. 4
- 18.** (a) State and explain greenhouse effect. 5
- (b) What are meant by renewable and nonrenewable energy sources? Explain with examples. 5

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