



C09-A-104/C09-AA-104/C09-AEI-104/C09-C-104/C09-CM-104/  
C09-CHST-104/C09-EC-104/C09-EE-104/C09-FW-104/C09-IT-104/  
C09-M-104/C09-MET-104/C09-MNG-104/C09-PKG-104/C09-TT-**104**

# 3004

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

MARCH / APRIL - 2019

**FIRST YEAR (COMMON) EXAMINATION**

**ENGINEERING CHEMISTRY &**

**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) Answer should be brief and straight to the point.

- 1 Write three differences between oxidation number and valency.
- 2 Define ionic bond. Give an example.
- 3 Define equivalent weight of an acid. Give an expression for it.
- 4 Define ionic product of water. Mention the units of ionic product of water.
- 5 Calculate the e.m.f. of the following cell  $\text{Zn} / \text{ZnSO}_4(1\text{M}) // \text{CuSO}_4(1\text{M}) / \text{Cu}$  (Standard potentials of Zinc and Copper Electrodes are - 0.76 V and 0.34 V respectively.)

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- 6 State three disadvantages of using hard water in industries.
- 7 Give a method of preparation and two uses of polythene.
- 8 Give the composition and two uses of (i) Producer Gas (ii) Bio gas
- 9 Define the terms. (i) Lithosphere (ii) Hydrosphere (iii) Atmosphere.
- 10 Classify the air pollutants based on their origin. Give examples.

**PART - B**

**10×5=50**

**Instructions :**

- (1) Answer any **FIVE** questions.
- (2) Each question carries **TEN** marks.
- (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11 (a) Write any four differences between orbit and orbital. **4**
- (b) State and explain Aufbau principle and Hund's rule **6**
- 12 (a) State any five differences between metals and non-metals. **5**
- (b) Define the terms (i) mineral (ii) Ore (iii) Gangue **5**  
(iv) Flux (v) Slag.
- 13 (a) State and explain Faraday's laws of electrolysis. **6**
- (b) State the postulates of Arrhenius theory of electrolytic dissociation. **4**
- 14 (a) What is Rust ? Explain the mechanism of rusting of Iron with chemical equations. **6**
- (b) Explain the different types of protective coatings used in prevention of corrosion. **4**

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- 15** (a) Explain ion-exchange process of softening the hard water. **7**  
(b) Write a brief note on reverse osmosis with its advantages. **3**
- 16** (a) Give a method of preparation and two uses each of **6**  
(i) Buna - S and (ii) Neoprene Rubber.  
(b) Write four characteristics of vulcanised rubber. **4**
- 17** (a) Define the terms (i) Ecosystem and (ii) Biodiversity. **4**  
(b) Explain four methods of control of water pollution. **6**
- 18** (a) Define solution, solute and solvent. Give examples for **5**  
(i) solid in solid solution (ii) solid in liquid solution.  
(b) Define Bronsted-Lowry acid and base. Give an example **5**  
for each. Mention two limitations of this theory.
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