

**3004**

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

**JUNE - 2019**

**DIPLOMA IN AUTOMOBILE ENGINEERING**

**ENGINEERING CHEMISTRY & ENVIRONMENTAL STUDIES (COMMON)**

**FIRST YEAR EXAMINATION**

**Time: 3 Hours**

**Total Marks: 80**

**PART - A (10 x 3 = 30 Marks)**

*Note 1: Answer all questions and each question carries 3 marks*

*2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences*

1. Explain the formation of covalent bond in H<sub>2</sub> molecule using Lewis dot method.
2. State modern periodic law. How many groups and periods are there in modern periodic table?
3. Define unsaturated, saturated and super saturated solutions.
4. Define buffer solution. Give an example.
5. Write any three differences between electrolytic cell and galvanic cell.
6. What are the salts responsible for temporary and permanent hardness of water?
7. Write any three characteristics of vulcanized rubber.
8. Give the composition and two uses of (i) Water gas (ii) Producer gas.
9. Define the following (i) Air pollution (ii) Aerosols
10. Define the terms pollutant and contaminant with an example each.

**PART - B (5 x 10 = 50 Marks)**

*Note 1: Answer any five questions and each question carries 10 marks*

*2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer*

11. a) State Pauli's exclusion principle. 2 marks  
b) State the postulates of Bohr's atomic theory. Write any two limitations. 8 marks
12. a) Define alloy and write any three properties of alloys. 5 marks  
\* b) Explain the process of calcination and smelting with examples. 5 marks
13. a) State and explain Faraday's laws of electrolysis. 6 marks  
b) A current of 0.5 amperes is sent through a solution of CuSO<sub>4</sub> for 20 minutes using platinum electrodes. Calculate the weight of copper deposited (Atomic weight of Copper=63.5). 4 marks
14. a) Write a brief note on electrochemical theory of corrosion. 3 marks  
b) Explain sacrificial anode method and impressed voltage method of prevention of corrosion. 7 marks
15. a) Explain permutit process of softening hard water. 7 marks  
b) Write briefly about Osmosis and Reverse Osmosis. 3 marks
16. a) Define and explain addition polymerisation and condensation polymerization with one example each. 6 marks  
b) Write any four differences between thermo plastics and thermo setting plastics. 4 marks

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MNG/RAC/PET/TT-104

17. a) Explain any four causes of water pollution. 4 marks  
b) Explain the effects of water Pollution. 6 marks
- 18A. Define Normality. Calculate the Normality of 500ml solution containing 5.3gr  $\text{Na}_2\text{CO}_3$  (GMW = 106). 5 marks
- B. Explain Bronsted-Lowry theory of acids and bases. 5 marks

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