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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

ENGINEERING CHEMISTRY - II

[Time: 3 hours

(Maximum marks: 100)

PART — A

(Maximum marks: 10)

Marks

- I Answer all questions in one or two sentences. Each question carries 2 marks.
 - 1. What is the dual nature of the radiation? How is it related?
 - 2. What is electrochemical series/activity series?
 - 3. What is semisynthetic polymer? Give one example.
 - 4. What is calorific value of fuel and its unit?
 - 5. Expand the name PAN and CNG.

 $(5 \times 2 = 10)$

PART — B

(Maximum marks: 30)

- II Answer any five of the following questions. Each question carries 6 marks.
 - 1. (a) What is Velocity, wave length and frequency of radiation? And relate these three properties.
 - (b) Write down the electronic configuration of nitrogen N (Z-7) according to Hund's rule of multiplicity.
 - 2. (a) Differentiate between electrolytic cell and electrochemical cell.
 - (b) What is electrode potential? What are the important electrode potential shown by the cell?
 - 3. (a) Write a short note on catenation and tetracovalency of the carbon atom.
 - (b) Write any three differences between thermoplastic and thermosetting plastic.
 - 4. (a) Write any three characteristics of good fuel.
 - (b) What is ozone depletion? And what are the important consequences of ozone depletion?
 - 5. (a) Write down the value of quantum numbers n, 1, m and s of Al (Z-13).
 - (b) What is strong and weak electrolyte gives one example for each?
 - 6. (a) Briefly explain the saturated and unsaturated compounds with examples.
 - (b) Write any three remedies to prevent acid rain.



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| | | | Marks |
|------|------------|--|-------|
| | 7. (| a) What is optical fiber give any two application of optic fiber? | |
| | (| b) Explain the working of the Hydrogen-oxygen fuel cell. (5×6) | = 30) |
| | | PART — C | |
| | | (Maximum marks: 60) | |
| | (<i>P</i> | Answer one full question from each unit. Each full question carries 15 marks.) | |
| | | Unit — I | |
| Ш | (a) | Differentiate between orbit and orbitals. | 6 |
| | (b) | State the principle Aufbau Principle, Pauli Exclusion Principle and Hunds rule of maximum multiplicity then write down the electronic configuration of K(Z-19) and give the values of 'n' and' l'. | 9 |
| | | OR | |
| IV | (a) | What is a chemical bond? Explain the covalent bond and ionic bond with examples. | 8 |
| | (b) | Write down the major postulates of Bohr's atom model and give any three limitations Bohr's atom model. | 7 |
| | | Unit II | |
| V | (a) | State Faraday's law of electrolysis. And explain the electrolysis of molten and aqueous solution of sodium chloride. | 8 |
| | (b) | Explain the major applications of electrolysis and explain the Anodising. | 7 |
| | | OR | |
| VI | (a) | What is basic principle of Daniel cell? Construct the cell, write down the reaction occur at cell and function of salt bridge. | 9 |
| | (b) | What is the corrosion? Explain the chemistry behind the rusting of the iron. How to prevent the corrosion? | 6 |
| | | Unit — III | |
| VII | (a) | Give the general classification of the organic compounds with examples and structure. | 6 |
| | (b) | What is refractories and classify them based on chemical nature? And give the general properties. | 9 |
| | | OR | 0 |
| VIII | (a) | Explain the classification of polymers based on the Molecular forces. | 8 |
| | (b) | Classify the different types of glasses based on content, property and uses. UNIT — IV | 7 |
| IX | (a)· | Classify the different types of Air pollution, Source of air pollutants, and impact of air pollution. | 9 |
| | (b) | What is greenhouse effect? Consequences of greenhouse effect and how to control. OR | 6 |
| X | (a) | Brief notes on (i) Natural gas (ii) Water gas (iii) Producer gas and (iv) Gober gas | 8 |
| | (h) | What is cracking? Explain thermal and catalytic cracking. | 7 |