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(REVISION — 2015)

Reg. No. .....

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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. (5×2 = 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, l, 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.

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)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (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

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. 7

UNIT — IV

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. 6

OR

X (a) Brief notes on (i) Natural gas (ii) Water gas (iii) Producer gas and (iv) Gober gas 8

(b) What is cracking ? Explain thermal and catalytic cracking. 7.