

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL – 2021**

ENGINEERING CHEMISTRY-II

[Maximum Marks: 75]

[Time: 2.15 Hours]

PART-A

(Answer *any three* questions in one or two sentences. Each question carries 2 marks)

I.

1. State Hund's rule of maximum multiplicity.
2. What is primary cell? Give one example.
3. Define corrosion.
4. Write the monomers of the following polymers.
a) PVC b) Nylon 6,6
5. What is smog? (3×2=6)

PART-B

(Answer *any four* of the following questions. Each question carries 6 marks)

II.

1. a) What is ionic bond? Give two examples.
b) Write De-Broglie relation and explain the terms. (4+2=6)
2. a) What is a salt bridge? What are its functions?
b) What is galvanization? (4+2=6)
3. a) State Faraday's law of electrolysis.
b) What is electrochemical series? (4+2=6)
4. a) Distinguish between saturated and unsaturated compounds with one example
b) What is vulcanization? (4+2=6)
5. a) What are refractories? Classify refractories based on chemical nature.
b) Give two uses of optical fibres. (4+2=6)
6. a) Distinguish thermal and catalytic cracking.

- b) Write two harmful effects of ozone layer depletion. (4+2=6)
7. a) List the characteristics of a good fuel.
- b) Mention the important greenhouse gases. (4+2=6)

PART-C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT-I

- III. (a). State Heisenberg's uncertainty principle. Calculate the uncertainty in the velocity of an electron if the uncertainty in position is 10^{-12} m. ($h=6.625 \times 10^{-34}$ Kg m^2s^{-1} , $m_e=9.1 \times 10^{-31}$ Kg. (5)
- (b) Explain the formation of hydrogen bond with two examples. (5)
- (c) What are quantum numbers? Write the quantum numbers for valence electron of Sodium (Atomic No: 11) (5)

OR

- IV. (a) Give the postulates of Bohr's model of atom. (5)
- (b) Distinguish between orbit and orbital. (5)
- (c) State Pauli's exclusion principle. Write the electronic configuration of
i) Chlorine (Atomic No: 17) ii) Nitrogen (Atomic No: 7)
iii) Aluminium (Atomic No: 13) (5)

UNIT – II

- V. (a) Distinguish between electroplating and anodising. (5)
- (b) Write notes on i) Cathodic protection ii) Antirust solution. (5)
- (c) Explain the construction and working of H₂-O₂ fuel cell. (5)

OR

- VI. (a) Explain the two types of conductors with example. (5)
- (b) Explain the construction and working of Daniel cell. (5)
- (c) Distinguish between chemical and electrochemical corrosion. (5)

UNIT – III

- VII.** (a) Compare organic and inorganic compounds. (5)
(b) Write the composition and uses of soda glass and borosilicate glass. (5)
(c) Explain the classification of polymers on the basis of intermolecular forces of attraction. (5)

OR

- VIII.** (a) What are functional groups? Write the functional group of acid, amine and aldehyde. (5)
(b) Distinguish between addition and condensation polymers. (5)
(c) Explain the uniqueness of carbon atom. (5)

UNIT – IV

- IX.** (a) Explain the formation of acid rain. What are its harmful effects? (5)
(b) What is green chemistry? Mention its important principles. (5)
(c) What are primary and secondary fuels? Give three examples for each. (5)

OR

- X.** (a) What are the various sources of water pollution? (5)
(b) What are fuels? How are they classified based on physical state. Give examples. (5)
(c) Explain the method used for the preparation of water gas and producer gas. (5)
