

ANNEXURE - I
CHEMISTRY
(Common for all branches of Diploma in Engineering)

1. Atomic Structure: Introduction-Fundamental particles – Bohr's theory – Quantum numbers — Aufbau principle – Hund's rule – Pauli's exclusion principle- Electronic configurations of elements up to atomic number 20, shapes of s,p,d orbitals.

2. Chemical Bonding:

Introduction – types of chemical bonds – Ionic bond taking example of NaCl and MgO – characteristics of ionic compounds and covalent bond taking example H₂, O₂, N₂, HCl characteristics of covalent compounds.

3. Solutions:

Introduction solution classification of solutions, solute, solvent, concentration, mole concept–Molarity, –Normality, equivalent weight using acids, bases and salts, numerical problems on Molarity and Normality.

4. Acids and Bases:

Introduction – theories of acids and bases – Arrhenius, Bronsted –Lowry theory – Lewis acid base theory – Ionic product of water - P^H and related numerical problems – buffers solutions – Applications.

5. Electrochemistry:

Conductors, insulators, electrolytes – electrolysis –Faraday's laws of electrolysis- numerical problems – Galvanic cell – standard electrode potential – electro chemical series –emf and numerical problems on emf of a cell.

6. Water Technology:

Introduction –soft and hard water – causes of hardness – types of hardness –disadvantages of hard water – degree of Hardness, units and its relations– softening methods – per mutit process – ion exchange process –qualities of drinking water – municipal treatment of water for drinking purpose.

7. Corrosion:

Introduction - factors influencing corrosion - electrochemical theory of corrosion- composition cell, stress cell and concentration cells– rusting of iron and its mechanism – prevention of corrosion by a) coating methods, b) cathodic protection (sacrificial and impressed voltage methods).

8. Polymers:

Introduction – polymerisation – types of polymerisation – addition, condensation and co-polymerisation with examples – plastics – types of plastics – advantages of plastics over traditional materials – Disadvantages of using plastics, thermo plastics and thermo setting plastics– differences between thermo plastics and thermo

setting plastics-preparation and uses of the following plastics : 1. Polythene 2. PVC
3. Teflon 4. Polystyrene 5. Urea formaldehyde –Rubber – natural rubber –
processing from latex –Vulcanization – Elastomers – Buna-s, Neoprene rubber and
their uses.

9. Fuels:

Definition and classification of fuels based on physical state and occurrence – characteristics
of good fuel - Extraction and Refining of petroleum - composition and uses of gaseous fuels.

A) water gas b) producer gas c) natural gas d) coal gas e) bio gas f) acetylene

10. Environmental chemistry

Introduction – environment –understand the terms lithosphere, hydrosphere, atmosphere bio
sphere, biotic component, energy component pollutant, receptor, sink, particulate, DO, BOD,
Threshold limit value, COD- Air pollution - causes-Effects – acid rain, green house effect –
ozone depletion – control of Air pollution – Water pollution – causes – effects – control
measures.

ANNEXURE - II

Number of Questions to be Set Unit Wise (TOTAL 25)

UNIT No	Topic	Marks
1.	Atomic Structure	3
2.	Chemical Bonding	2
3.	Solutions	3
4.	Acids and Bases	2
5.	Electrochemistry	4
6.	Water Technology	3
7.	Corrosion	2
8.	Polymers	3
9.	Fuels	1
10.	Environmental Chemistry	2
Total		25

ANNEXURE - III

MODEL QUESTIONS FOR CHEMISTRY

- The normality of oxalic acid solution is found to be 0.05N. How many grams of oxalic acid is present in 100 ml of solution.
 - 1.26
 - 12.6
 - 126
 - 0.126
- Which of the following is responsible for temporary hardness of water
 - Ca CO₃
 - Ca Cl₂
 - Ca SO₄
 - Ca (HCO₃)₂
- The monomer of Rubber is----
 - Isoprene
 - Propene
 - Polyisoprene
 - Bakelite