

**DETAILED SYLLABUS FOR THE POST OF ASSISTANT
TESTER CUM GAUGER (NCA-LC/AI)
IN MALABAR CEMENTS LIMITED**

(Cat No: 348/2024)

1. STRUCTURE OF SOLIDS – 10 Marks

Classification of solids (point group) crystal systems Unit cell, space lattice, types of crystals, close packing, Packing efficiency, radius ratio, Structure of solids, Structure of ionic solids, structure of covalent solids

2. NON AQUEOUS SOLVENTS - 10 Marks

Classification of solvents, Characteristic properties of solvents, Important non aqueous solvents, its advantages and disadvantages Reactions in non aqueous solvents

3. ENVIRONMENTAL CHEMISTRY - 10 Marks

Pollution and pollutants, Different types of pollution, Air pollution, water pollution, Soil pollution, Monitoring of air pollutants, Pesticides, Different types of pesticides.

4. ANALYTICAL CHEMISTRY - 10 Marks

Significant figures, Errors, Types of errors, correction of determinate errors, precision and its expression, Accuracy Statistical treatment of analytical data

5. THEORETICAL BASIS OF ANALYSIS-GRAVIMETRIC METHOD

10 Marks

Gravimetric method of analysis, its classification, desirable Properties of gravimetric analysis, types of precipitation Errors in gravimetry, scope of gravimetry

6. THEORETICAL BASIS OF ANALYSIS-VOLUMETRIC METHOD -

10 Marks

Basic requirements of titration reaction, Primary standard, secondary standard, expression of concentration of standard solution, Acid base titration, redox titration, Complexometric titration

7. CEMENT - 10 Marks

Grade of cement, Method to test grade of cement, setting of cement, setting time of cement, correlation between setting time and hardness of cement, composition of cement

8. PRODUCTION OF CEMENT - 10 Marks

Production of cement, comparison of different types of cement, function of each components in cement, Production of High quality, medium quality and low quality cement, Advantages and disadvantages of high medium and low quality cement

9. CORROSION - 10 Marks

Corrosion, types of corrosion, Chemistry of corrosion, prevention of corrosion, disadvantages of corrosion, corrosion of steel in presence of components of cement.

10. THERMODYNAMICS - 10 Marks

Basic terms in thermodynamics, Internal energy, heat capacity, specific heat capacity, Mayers relation, enthalpy, Hess's law its application, Entropy, Gibbs free energy, Free energy and equilibrium constant, spontaneous process, conditions of spontaneity

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper
