SYLLABUS FOR THE POST OF SENIOR SCIENTIFIC ASSISTANT (CHEMISTRY) IN DRUGS TESTING LABORATORY, GNCTD UNDER DRUGS CONTROL DEPARTMENT, GNCTD

1) Modern Analytical Techniques:

Principles, Apparatus/Instrumentation & Applications of UV-Visible Spectroscopy, Infra Red (IR) Spectroscopy, Mass Spectrometry, NMR spectroscopy, Chromatographic Techniques, Electrophoresis Techniques, Spectroflourimetry, Flame Emission & Atomic Absorption Spectrophotometer , Thermal Methods of Analysis; Basics of different types of Titration Methods used in analysis of drugs compounds, The principle & application of Karl Fischer Titration method, Refractometer, Polarimeter, Role of Dissolution & Disintegration in Drug Testing

2) Organic Chemistry:

General principles, IUPAC Nomenclature System, Basic Chemistry of Aliphatic Hydrocarbons, Chemistry of Halogenated Hydrocarbons, Alcohols, Phenols, Epoxide, Carbonyl Compounds, Carboxylic Acids and their Derivatives, Amines and Amides, Protection & Deprotection of groups, Aromaticity & Aromatic chemistry, Different Aromatic Classes of Compounds, Polycyclic Aromatic Hydrocarbons, Heterocyclic Chemistry, Bridged Rings, Kinetic & Thermodynamic Control, Stereochemistry, Carbohydrates, Amino acids & proteins, Pericyclic reactions.

3) Biochemistry:

Basic Concept of Biochemistry, Definition and Scope of Biochemistry, High Energy Phosphates, ATP-ADP cycle, Basic Chemistry, Biomolecular Structure & Classification of Proteins and Amino Acids, Nucleic Acids, Carbohydrates, Lipids, Enzymology, Nature of Enzyme Catalysis, Naming of Enzymes, Michaelis-Menten concept of Enzyme Action, Active binding and Catalytic Sites, Factors affecting enzymes catalyzed reactions, Control of enzyme activity, Multi enzyme systems, Metabolic Generation of Energy, Energy relationship between catabolic and anabolic pathways, Generalized concept of Glycolysis, Kreb's cycle, Glycogen synthesis, Oxidative Phosphorylation and Electron Transport Chain, Utilization of Energy, Energy utilization in Anabolic Processes, Dark reaction of photosynthesis

4) Physical Chemistry:

State of Matter, Properties of Matter, Structure of Atom, Chemical Bonding and Molecular Structure, Chemical Thermodynamics, Equilibrium, Redox Reaction, Surface and interfacial phenomenon, Viscosity and Rheology, Dispersion Systems, Classification of complexes, methods of their preparations and analysis, Buffers, Solubility, Electrochemistry, Chemical Kinetics

5) Cell Biology:

Basic Definition, Structure, Types and Functions of Cell, Structure and Function of the Endoplasmic reticulum, Golgi complex, Evolution of mitochondria and chloroplast, Lysosome, Ribosome, Photosynthetic process, Cell Nucleus, Structure and Function of Nucleus, Nucleosome and chromosome, Structure of Chromatin, Mitosis and Meiosis, Cell cycle, Nuclear envelope, Different processes in Cell, DNA and RNA, Nucleic acids, Structure of DNA, DNA replication, Transcription and Post transcriptional modifications, Structure and types of RNA, Capping and splicing, Polyadenylation, Methylation, Genetic Code, Basics of Genetics, Chormosomes Structure and Mutations, Recombinant DNA Technology, PCR technology

6) Regulatory Affairs:

Basic knowledge of Good Laboratory Practices (GLP), ISO Standards, NABL, BIS, Indian Pharmacopocia Standards of drugs