

National Forensic Sciences University

Syllabus for the Post of Scientific Assistant - Chemical - Gr. C
(Contractual Basis)

Directorate of Forensic Science Laboratory
Home Department, State of Maharashtra

Paper style:

Paper type: Multiple Choice Question

Total Question: 60 (48 question from unit I to VI and 12 questions from Unit – VII)

Negative Marking: No Negative Marking

Examination Duration: 60 Minutes

Examination Schedule:

Date of Examination: 5th March 2025

Reporting time: 12.30 pm

Examination time: 02.00 pm to 03.00 pm

In case of any query send email to recruit_dfs@nfsu.ac.in.

Check [https://nfsu.ac.in/Contractual Recruitment](https://nfsu.ac.in/Contractual_Recruitment) for the syllabus, seating arrangement and any other updated related to the said recruitment.

Keep a note that the university will not send separate email individually pertaining the recruitment process of said post

Unit-I

Introduction, Definition, Principles, Scope and branches of Forensic Science, Development of Forensic Science in India, Crime Scene investigation: Definition of Crime Scene. Classification of Crime Scene, Indoor & Outdoor, Primary & Secondary, Macroscopic & Microscopic, Crime scenes, Significance and Ethics of Crime Scenes.

Unit-II

Physical Evidence: Definition, Classification, Source, Significance and value of Physical evidence. Linkage between Crime Scene victim and Criminal. Study of Crime Scene relating to gas explosion, Fire and Arson, homicide, suicide, murder, mass disaster. Tools and techniques in Crime Scene search. Collection, Preservation, Packaging of the material at Crime Scene. Re-Construction of Crime Scene. Chain Custody and safety measures at the Scene of Crime and in Laboratory. Basic Principles of Statistics -Probability, Mean, Median, Mode, Chi square, F-Test, measurement of uncertainty, Systematic and random sampling Expert testimony in court of Law -Admissibility of evidence, Laws and acts relevant to Forensic Science.

Unit-III

Narcotics Drugs and Psychotropic substances, Introduction and Classification of Control Substances, Precursor Chemicals, Narcotic Raids - Evidence and Forensic Examination of NDPS, Mandatory Provisions of NDPS Act, Classification of NDPS Drugs, Drug Dependence and Drug Tolerance

Unit-IV

Explosive Chemistry - Introduction, Classification and Chemistry of Explosives, Various Types of IEDs and their reconstruction, Mechanism of Explosion, Processing of Explosion Scene of Crimes –Role of Forensic Scientists in Post Blast Investigation. Petroleum Chemistry- Physical Properties of Petroleum Products, Forensic examination of petroleum products as per BIS. Fire Chemistry- Chemistry and thermodynamics of fire, Forensic Investigation of Fire Basic Biochemistry- Amino acids, Lipids, Proteins, Carbohydrates.

Unit-V

Forensic Toxicology Examination- Law relating to Poison, Introduction to Poisons, Forms of Poisons, Classification and methods of administration of poisons, Mode of action of Poisons, Collection and Preservation of Biological evidences and circumstantial evidences in fatal and survival cases, Submission of samples to the laboratory, Specific analysis plan, isolation and extraction of Poison/ Drug by various methods using instrumental techniques. Basic Principles of Pharmacology and Forensic Pharmacology, Organo-metallic Chemistry, Lasers Photochemistry and Spectroscopy, Chemical Periodicity, Main Group of elements and their compounds, concept of acids and bases, Hard Soft acid base concept, Non aqueous solvents

Unit-VI

Qualitative and Quantitative Analysis - Solvent Extraction- Advantage and Applications- pH extraction, masking agents, salting out techniques, relation between distribution ratio and distribution coefficient, advantage and application of solvent extraction, quantitative treatment of neutral chelate in extraction system, single extraction versus multiple extraction, solid phase extraction, accelerated solvent extraction, ultrasonic extraction, heat reflux extraction. Chromatography - Introduction, Principle, procedure and applications, applications of paper chromatography, Thin layer chromatography, High pressure thin layer chromatography, Gas liquid chromatography, ion- exchange chromatography, High pressure liquid chromatography, Liquid chromatography- Mass spectrometry, Gas chromatography- Mass spectrometry.

UNIT VII – Marathi Proficiency test

Marathi language Fundamentals, literature and culture, general rules of Marathi grammar, write and speak concepts in Marathi language, sentence formation and correction or error identification and correction in Marathi language, question and answer from paragraph in Marathi language etc.,

