AIFSET 2022

All India Forensic Science Entrance Test

Syllabus for M.Sc Forensic Science Entrance Exam

- **INTRODUCTION TO FORENSIC SCIENCE**

Definition, History, Development and Scope of Forensic Science in India. Basic principles of Forensic Science and its Significance, organization and Functioning of State and central Forensic Science Laboratories, Ethics in Forensic Science

- **PHYSICAL EVIDENCES**

Definition, Types, class and Individual characteristics, Different Searching Methods for Locating Physical Evidence at the Scene of Crime, Chain of Custody.

- **FUNDAMENTAL OF POLICE**

Historical Development of the Police System in India. Police in the Indian Constitution. Obiective of Police, General organization of Police at state & Range Level. police organization under Central Government: General Information, Structure and Function of A. [] BSF [2] Assam Rifles [3] CRPF [4] CrSF [s] rTBp [6] NSG B. [1] BPR & D [2) CBI [3] IB [4] RAw [5] NCRB t6l NrCFS t7l NpA [8] Ur police Force.

- **POLICE SCIENCE**

Definition & Scope. Who is an Investigator, Investigator & his Qualities, General Guidelines for Investigator, Interview of Witness, Interrogation of Suspect

- **SCENE OF CRIME**

Meaning, Types and, Protection of Scene of crime, crime Scene Documentation- Note Taking, Videography, Photography and. Sketching Methods, Importance of photography, General Guidelines, Admissibility in Court, Various forms such as Videography.

- **CRIME SCENE MANAGEMENT AND RECONSTRUCTION**

Elements of Crime Scene Management: - Information Management, Technology Management, Man-Power Management & Logistic Management. Introduction to Crime Scene Reconstruction, Nature of Reconstruction, Basic Principles for Physical Evidence and Reconstruction (Recognition, Identification, Individualization And

Reconstruction), Stages in Reconstruction,Types of Reconstruction, Pattern Evidence in Reconstruction (Bloodstain Pattern Analysis for Reconstruction, Glass Fracture Patterns, Fire Bum Patterns, Tire and Skid Mark Pattems), Writing A Reconstruction Report.

- **FINGER PRINTS, DOCUMENTS AND OTHER IMPRESSIONS**

Fingerprints: History, Types of Fingerprints, Type of FingerPrint patterns, Different classifications, Location and Preservation of Fingerprints, Development of Latent prints by Physical and Chemical Methods, Matching of Fingerprints.

Documents: Definition of Questioned Documents, Types of Documents, Types of Writing Instruments their characteristics and Examination, Paper and its Examination, Basic Tools needed for Forensic Document Examination- Ultraviolet, Visible, Infrared, and Fluorescence Spectroscopy, Photomicrography,, Microphotography, Visible Spectral Comparator, Electrostatic Detection Apparatus.

Hand Writing: Hand Writing and its Characteristics, Factors Affecting Hand Writing, Samples for Comparison, Comparison of Hand Writings, Disguised and Indented Writings and their Detection, Typed and Computer Generated Documents, their Comparison, Alteration in Documents and their Detection, Foot & Shoe Prints, Methods of their Preservation and Examination, Tyre Marks and Track Marks and their Examination.

- **FORENSIC BIOLOGY AND SEROLOGY**

Brief Description and Function of the Human Digestive System, Respiratory System, Circulatory System. Nervous System. Reproductive System. Structure, Composition and Examination of biological fluids like- Blood and Bloodstains,Seminal stains, Saliva, Urine, Pus, Feces etc

Hair and Fiber: Hair Anatomy, Collection, Examination of Hairs from Animal and Human Origin. Types ofFiber and their Properties, Examination etc.

Forensic Botany: introduction, Nature & Scope, Woods & their Identification and Matching, Diatoms and their Forensic Significance in Drowning Cases, Study and Identification of Pollen grains.

D N A: Structure of DNA, Polymorphism in DNA, General idea about RFLP and PCR Methods of Biological Fluid Analysis, Merits and Demerits of RFLP and PCR Advanced Methods for Forensic DNA Examination etc.

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- **CHEMICAL SEPARATION AND INSTRUMENTAL TECHNIQUES**

General Understanding Of: Distillations, Sublimation, Crystallization, Solvent Extraction.

Chromatographic Techniques: Definition, Different Classification like- According to Mode, Principle, Stationary Phase, etc., brief idea about Column Chromatography, Paper Chromatography, Thin Layer Chromatography, Gas Liquid Chromatography, Liquid Chromatography, Hyphenated Chromatography As- LC-MS, GG-MS etc.

Electromagnetic Spectrum &. Spectroscopic Methods - Principle, Apparatus, Procedure & Importance: Emission Spectroscopy, Atomic Absorption Spectroscopy, UV Spectroscopy, Electron Spectroscopy, Raman Spectroscopy, IR & FTIR Spectroscopy.

General Idea About: Neutron Activation Analysis, Mass Spectrometry.

Electrophoresis- Principle, Types, Equipment and processing, Immune electrophoresis, Analysis of Proteins by electrophoresis and their detection.

- **FORENSIC MEDICINE**

Meaning And Scope, Identification of a Person: Through all Factors in Fixing Identity, post-Mortem Examination (Autopsy) (Types of Autopsy, objectives, procedures), Meaning & Modes of Death, and their characteristics, Signs of Death and post-Mortem changes. wounds and their characteristics, Injuries due to Heat, Lighting, Electricity and Radiation, Firearm Injuries,Differentiation between Ante-Mortem and Post-Mortem Wounds.

- **FORENSIC TOXICOLOGY AND DRUG ANALYSIS**

Poison and types of Poisoning, Action of Poison, Factors Modifying the Action if poison,Extraction, Isolation and clean-Up Procedures- For Non-volatile organic poison, volatile Poisons, Toxic cations or Metallic Poisons, Toxic Anions From viscera, Drugs, Botanical Evidence, Biological Evidence etc.

General idea and Examination of opium, Semi - Synthetic opiates, cannabis Drugs Such as Bhang, Ganja And charas, LSD And Amphetamine, Important Benzodiazepines, Phenothiazines, Barbiturates Etc. Animal Poisons Like Snake, cantharides, Bees, wasp etc.

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- **GENERAL CHEMISTRY**

Photochemistry- Interaction of Radiation with Matter, Difference between Thermal and Photochemical Processes, Laws of Photochemistry, Grothus -Drapers Law, stark - Einstein Law. Jablonski Diagram, Description of Fluorescence, phosphorescence, Nonradiative Processes, Quantum Yield, Photosensitized Reactions, Energy Transfer processes etc.

Organic chemistry- Structure and Bonding: Hybridization, Bond Length and Bond Angles, Bond Energy, Localized and Delocalized Chemical Bond. Structure and Characteristics of Alkane, Alkene, and cycloalkane, Alcohol, Phenol, Ethers, Aldehyde, Ketone, carboxylic Acid etc.

Inorganic chemistry- Trends in Periodic Table and Applications in predicting and Explaining the Physical and Chemical Behaviors, Definitions of Acid and Base, Classification of Acids and Bases, Essential and Trace Elements in Biological process, Metalloporphyrins with special Reference to Haemoglobin, Types of Magnetic Behaviors, Method of Determining Magnetic Susceptibility, Spin only Formula, L-S Coupling.

- **BASIC PHYSICS**

Physical Properties- Temperature, weight and Mass, Density, Refractive Index, Diffraction, Polarization

Laws of Motion- Motion in a Uniform Field, Centripetal Acceleration, Motion under a Central Force

Basic optics- Light as an Electromagnetic wave, Interference of Light, Principle of Superposition, Two-Slit Interference, Michelson Interferometer and its Application

Microscopy- Numerical Aperture and Resolving power of Microscopic systems, How the Microscope Forms Images; Simple, Compound, Stereoscopic, polarizing, Comparison,Fluorescent & Electron Microscopes