

NATIONAL FORENSIC SCIENCE LABORATORY
Khumaltar, Lalitpur

Syllabus of Physics-group
Sixth Level

Subject: General Forensic (1st paper)

Part I: GENERAL

20%

Definition of forensic science, Physical evidence. Locard's principle. Individuality principle. Interpretation of laboratory result and report writing. Expert witness (including cross examination). Nepalese History of Forensic Science. Present status of Forensic Science in Nepal. General concept of criminal justice system of Nepal. Nepalese acts related to physical evidence and its examination.

Part II: FORENSICS

40%

Ballistics

Significance of forensic examination of firearms, bullets, cartridges and primers. Safety aspects of handling of firearms and ammunition. Different types of marks produced during the firing process.

Glass

Significance of forensic examination of glass fractures. Determination of direction of impact: cone - fracture, rib marks, hackle marks, backward fragmentation and its physical matching. Density comparison, physical measurements and refractive index comparison.

Paint

General concept of paint and their composition, pigment distribution, macroscopic and microscopic studies.

Tool marks

Different type of tool marks, class characteristics and individual characteristics.

Computer forensics

Introduction and significance of Computer forensics.

Part III: METHODS AND MANAGEMENT

40%

Spectroscopy

Principle and application of UV, visible and Infrared spectroscopy, sources of radiation: their utility and limitations. Interaction of radiation with matter: reflection, absorption, transmission, fluorescence, phosphorescence and their forensic applications.

Video Spectral Comparator (VSC)

Principle and application of VSC.

Photography

Basic principles and techniques of photography, cameras and lenses, exposing, developments and printing, digital photography, crime scene and laboratory photography.

Restoration of erased / obliterated marks

Identification methods of erased and obliterated marks (cast, punch, engraved and etching).

Other Advances

Finger for palm print, gait pattern, signatures, Pattern comparison, Computer simulation, Image processing - Image capturing, Image restoration & enhancement. Image editing.

Model Question (Objective)

Test fire is useful to individualize the

- a) Individualize the firearm used .
- b) Identify the distance of firearm used .
- c) Find the type of bullet used .
- d) above all

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Subject: Questioned Documents (2nd paper)

Part I: FINGERPRINTS AND IMPRESSIONS

50%

Fingerprints: Definition and significance of fingerprints. Development of fingerprints, formation of ridges, pattern types, pattern areas. Taking of reference fingerprints, preserving and lifting of fingerprints, comparison of fingerprints.

Chance prints

Latent & Visible Fingerprints, Plastic Fingerprints, Different techniques of development of latent fingerprints,

Other Prints/marks

Forensic significance and lifting of Footprints and Tyre Marks.

Printed matters

Identification of type writings (Standard/electric/electronic typewriters), Identification of computer printouts and printers. Examination of photo copies (Black & White, colour), Identification of mechanical impressions (rubber stamp/seal impressions), Identification of printed matter, Examination of security documents including currency notes, passports and other travel documents,

Part II: QUESTIONED DOCUMENTS

50%

Questioned Documents

Introduction and classification of questioned documents. Various types of documents, basic tools needed for forensic documents examination and their use, cross stroke examination.

Forensic Documents

Specimen/admitted writing/type writing etc handling, preservation and marking of documents, Genuine and forged documents, holographic documents.

Handwriting

Common and individual characteristics associated with handwriting and its identification. General characteristics of handwriting, Important guidelines for the collection of known writings for comparison to a questioned documents, Disguised writing and anonymous letters, Examination of disguised /distorted writings/signatures, Identification of writing and signatures, detection of forgery and fixing the authorship of forged writings/signatures.

Papers and inks

Detection and decipherment of alteration including addition, overwriting, obliteration and mechanical/chemical erasures. Detection and decipherment of secret writing/indentation, variation in pen inks.

Model Question (Objective)

In handwriting major role is played by

- a) Pen pressure
- b) Slant
- c) Individual characteristics
- d) slope