

NATIONAL FORENSIC SCIENCE LABORATORY
Khumaltar, Lalitpur

Syllabus of Physics-group
Fifth Level

Subject: General Science (1st paper)

Part I: GENERAL SCIENCE

50%

Physics

General concept of ultraviolet and infrared radiation and their uses. Interference of light (wave velocity and group velocity, superposition of two waves, condition for interference). Refraction and dispersion of light.

Chemistry

General Concept of ionic equilibrium: pH, buffer solution, buffer capacity and buffer range, pH change in acid base titration. Bronsted and Lewis acid-base concept, hard and soft acid and base, relative strengths of acid and base. Principles of volumetric and gravimetric analysis.

Statistics

Data collection, measurement of central tendency (mean, mode, median) variability, standard deviation, standard error, Concept of probability and distribution. Elementary concept of sampling (random & non-random). Concept of linear correlation and regression.

Part II: LABORATORY METHODS

50%

Chromatographic Techniques

Basic principles and application of thin layer chromatography (TLC).

Spectrophotometry techniques

General Principles and applications of Spectrophotometry techniques (UV, IR).

Photography

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

Physical methods

Determination of specific gravity, radiation of curvature, thickness, diameter, refractive index.

Microscopes

Principle and application of Biological microscope and stereomicroscope.

Safety measures

General idea of safety precaution in the laboratory. Care and maintenance of laboratory equipments.

Model Question (Objective)

Stereomicroscope is a specific microscope in terms of

- a) Three dimension
- b) High resolution
- c) High magnification
- d) None of above

NATIONAL FORENSIC SCIENCE LABORATORY
Khumaltar, Lalitpur

Syllabus of Physics-group
Fifth Level

Subject: Forensic (2nd paper)

Part I: GENERAL

20%

Definition of forensic science, Physical evidence. Locard's principle. Individuality principle. Objective and services of National Forensic Science Laboratory. Labeling of physical evidence, chain of custody and record keeping.

Part II: QUESTIONED DOCUMENTS

40%

Fingerprints

General concept of fingerprints and its comparison. Latent & Visible Fingerprints.

Forensic Documents

Specimen/admitted writing/type writing etc.

Handwriting

General characteristics of handwriting, Common and individual characteristics associated with handwriting and its identification. Significance of disguised documents in crime investigation.

Papers and inks

Importance of pen ink variation in detection of alteration including addition, overwriting, and obliteration. Changes in paper due to mechanical/chemical erasure.

Part III: CRIMINALISTICS

40%

Ballistics

Introduction of firearms, bullets, cartridges and primers.

Glass

Physical properties of glass and its breaking patterns. Its significance in crime investigation.

Paint

General concept of paint and their composition and its significance.

Tool marks

General concept of marks and impression and their forensic importance.

Erased / obliterated marks

Introduction of erased and obliterated marks and its significance.

Model Question (Objective)

Questioned Document is meant by

- a) Admitted document
- b) Earlier written document
- c) Disputed document
- d) Sample document