

**SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR**



**M.Sc. Forensic Science
Under Credit Based Course System
SEMESTER – IV**

**PS04CFSC21
Questioned Document**

UNIT-I

Introduction to Questioned Document:

Nature and problems of document examination, classification of documents, procurements of standard admitted/specimen writing, handling and making of documents, preliminary examination of documents, basis of hand writing identification, variation in genuine handwriting- natural variations, process of comparison.

Basic tools needed for forensic documents examination and their use.

Various types of documents:-

Genuine and forged documents and holographic documents.

UNIT-II

Classes of Handwriting:

Disguised writing and anonymous letters- identification of writer. Examination of signature-characteristics of genuine and forge signature, writing instrument and their influence on handwriting,

Examination of Handwriting:

Examination of alteration, erasers, overwriting, addition and obliteration, decipherment of secret, indented and charred documents, examination of sealed impression and other mechanical impression.

UNIT-III

Examination of Questioned Documents:

Age of documents by examination of signature, paper, ink and writing etc., Credit cards, forensic stylistics, linguistics, e-documents, digital signature, opinion writing and reason for opinion.

Various types of printing security documents, printing and examination of counterfeit currency notes, passport, Visa, stamp, papers, postal stamps, lottery, etc.

UNIT IV

Digital Documents:

Examination of computer printout, identification of dot-matrix, ink-jet and laser printer, electronic typewriter, identification of type-writings, identification of typist,

Examination of black and white, color Xeroxed copies, carbon copies, carbon copies, fax messages forgeries and their detections, examination of built up documents.

Photography of documents.

e-documents, digital signature,

Basic Texts & Reference Books:-

- 1) Forensic Science in Criminal investigation – B.R.Sharma.
- 2) Crime Scene Management – M.S.Dahiya.
- 3) Suspect Document – Wilson R. Harrison.
- 4) Credit Cards: A legal guide – Rupa Mehta.
- 5) Cross Examination of Handwriting Experts – Lal B.
- 6) The identification of Handwriting & Cross Examination of Experts – M.K.Mehta.

PS04CFSC22

Forensic Biology & DNA Profiling

UNIT-I

WILD LIFE FORENSICS: introduction and importance of wild life, protected and endangered species of animals and plants, wild life species- identification and examination of physical evidence by conventional and modern methods, identification of pug marks of various animals, census of wild life population.

FORENSIC ENTOMOLOGY: general entomology, significance of terrestrial and aquatic insects in forensic investigations and their role in crime detection, insect's succession and its relationship to determine time since death. Impact of ecological factors on insect's developments.

UNIT-II

BODY FLUIDS/ STAINS AND TISSUES:

Introduction to various types of body fluids and tissues- morphology, histology and functions, identification and examination of blood stain- physical, fluorescence, biochemical and microscopic examination, morphological structure of spermatozoa of human and animals. Confirmatory test for a spermic semen-p-30, identification of lochial and menstrual stains by microscopic, biochemical and Electrophoretic method, identification and examination of other body fluids/stains- vaginal, saliva, urine, pus, faeces, vomit, milk, sweat and tears etc.

HAIR AND FIBRE: morphology and biochemistry of human and animal hair, and its microscopic examination, determination of origin race, sex, site. Types of fibers- forensic aspects of fibre examination- fluorescent, optical properties, refractive birefringence, dye analysis etc. identification and comparison of man-made and natural fiber.

UNIT-III

IMMUNOLOGY

Haptoglobins-various types, HLA. Polymorphic enzymes and their forensic significance.

Immunology: immune system, immune response, innate and acquired immunity, antigens, heptanes and adjuvants, immunoglobulin- types, physio-chemical properties and function, raising of anti-sera, Lectins- their forensic significance, buffers and serological reagents, methods of sterilization employed for serological work.

FORENSIC BOTANY: various types of wood, timber variants, seeds and leaves- their identification and matching. Diatoms- types, morphology, methods of isolation from different tissue and forensic importance of planktons especially diatom, forensic significance in drowning cases.

Study and identification of pollen grains, identification of starch grains, powder and stains of spices etc, paper and paper pulp identification, microscopic and biochemical examination of pulp material etc., isolation, classification and identification of microbial organism.

UNIT-IV

DNA PROFILING: history of DNA fingerprinting, Molecular biology of DNA, variations, polymorphism DNA typing systems- RFLP analysis, PCR amplifications, Sequence

polymorphism, analysis of SNP, Y-STR, mitochondrial DNA, Evaluation of results, Interpretation, allele frequency determination, Match probability- database, quality control, certification, Forensic significance of DNA profiling.

Basic Texts & Reference Books:-

- 1) Criminalistics: An Introduction to Forensic Science – Richard Saferstein.
- 2) Crime Scene Management – M.S.Dahiya.
- 3) Forensic Science in Criminal investigation – B.R.Sharma.
- 4) Principles of Forensic Medicine including Toxicology – Nandi Apurba.
- 5) Parikh's Textbook of Medical Jurisprudence Forensic Medicine – C.K.Parikh.
- 6) Book of Biotechnology – B.D.Singh.
- 7) Dealing with DNA Evidence – Semikhodskill A.
- 8) Genetic Policing: The use of DNA in Criminal Investigation – Williams Robin.

PS04CFSC23 Practical

1. Identification of Handwriting.
2. Detection of forgeries: simulated & traced.
3. Detection of disguised writings.
4. Examination of addition, alteration, obliteration in documents.
5. Examination of indented writings.
6. Identification of writing inks by TLC.
7. Study of security Documents (passport & currency notes)
8. Examination of typescripts & printed matter.
9. Examination of paper.
10. Morphological & microscopical examination of hair & fiber.
11. Examination of bloodstains: physical & chemical
12. Identification of diatoms.
13. Identification of pollen grains.
14. Examination of Saliva.
15. Development of Pugmarks: POP & Wax method.
16. Determination of species from hair analysis.

Basic Texts & Reference Books:-

- (1) Forensic Physics, Biology, Chemistry Manual (Directorate of Forensic Science).
- (2) Forensic Serology Manual (Directorate of Forensic Science)

PS04CFSC24 Dissertation

PS04CFSC25 – VIVA