

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER
SYLLABUS FOR SCREENING TEST FOR THE POST OF
SENIOR SCIENTIFIC OFFICER- DOCUMENT DIVISION
(STATE FORENSIC SCIENCE LABORATORY, RAJASTHAN,
JAIPUR)

1. Forensic Science

What is Forensic science?, History of forensic science, Areas of forensic science, Criminal Justice System & Role of forensic science in justice delivery system, Chain of custody, preservation & spoilages, sampling, reports, expert testimony. Legal aspects of forensic science– Legal Constraints on the Criminal Investigation process, Admissibility of scientific & technical evidence, Difference between a civil case & a criminal case, being a witness & an expert consideration for testimony. 293Crpc and amendment in 292 Crpc , Section 45 evidence act, definition of expert.

Indian Penal Code Under sections viz. 420,468,471,120B, 302, 306, 498A, Copy right act, 489A,B,C,D & E, Office Secret act.

2. Analytical Techniques

Microscopy - Introduction, Magnification Systems, Lenses, magnifier, Compound Magnifying Systems, Principle and working of Simple -Microscope, Stereo microscope, Zoom stereo microscope, Comparison microscope, light sources – UV, IR , transmitted, oblique light, spot light.

Spectroscopic techniques: Introduction: Properties of light, Refraction, Reflection, UV/Visible Spectrophotometer, absorption laws and its application in Forensic Science, Infrared (IR) Spectroscopy, & it's Application in Forensic Science, Raman Spectroscopy, Mass Spectrometry, and it's applications in Forensic Science & Forensic Document examination. Separation methods - Thin Layer Chromatography, Gas Chromatography for qualitative and quantitative analysis & its application in Forensic document examination.

Photomicrography, Forensic photography using scientific equipment, Photography of documents, Digital photography and its application in Forensic documents, juxtapose charts and demonstrative photographs, admissibility of digital photography in court of law.

3. Forensic Document Examination

Scope & importance of Forensic Document examination; Nature & problems of Forensic Document Examination – Classification of documents; Disputed/ Specimen/ Admitted ; Care, handling, preservation of documents; Observation tests and their application in handwriting examination; Preliminary examination of case documents, Process of comparison of handwriting; Principle of handwriting examination; Importance of natural variations and disguise in hand writing examination; Holographic documents.

Writing instruments, working of fountain pen, ball pen, gel pen, writing characteristics produced by them, Viscosity, Surface tension, Capillary rise, writing inks, writing surface, care, handling, preservation, packing and marking of documents - Dos and Don'ts in forwarding of documents.

4. Handwriting and Signature examination

Physiology of handwriting, various writing features– terminology and definitions, general characteristics of handwriting viz.: speed, skill, pen pressure, alignment, line quality, slant, proportion of letters etc., and their estimation, individual characteristics of handwriting and their estimation.

Natural variations in handwriting and its importance, disguise in writing : cause and identification, comparison of like with like, process of comparison. Examination of alphabets and numerals.

Extrinsical and Intrinsical factors affecting handwriting. Influence of writing instrument and writing surface on handwriting.

Nature and types of forgeries, characteristics of genuine and forged signatures, their detection, identification of line quality, artificial and natural tremor.

Identification of writer of Anonymous letters, Forensic stylistics, identification of unaccustomed hand writing. Examination of non-familiar script and illegible writing.

5. Standards for comparison

Nature and types of standards, quality and quantity of standards required, procedure of collection of specimen writing, requirement and importance of admitted writing, precautions in collection of standards. Legal provision of taking specimen writings. Standard methods of taking specimen writing. Problems and outcome of disguised specimen, requirement of contemporary admitted.

6. Miscellaneous Forensic Document problems

Classification of Erasures : Chemical & Physical, detection and decipherment, techniques involved, detection and decipherment of addition/ alteration/ obliteration in writing and printed documents, techniques and limitation involved. Sequence of strokes determination in similar and different inks & writing instruments. Examination of built-up documents. Examination and decipherment of indented writing.

Chemistry of dyes and pigments, Luminescence , Fluorescence, Phosphorescence , types of paper and Inks, techniques used in the analysis of paper & inks, History of Ink, chemical composition of different types of ink, destructive and non-destructive techniques involved in identification of inks: spectral comparison, chemical separation techniques using TLC, HPTLC, GC. Relative and absolute age of ink, techniques involved. Invisible/ secret ink, thermal ink.

State-of-the-art-equipment :- working principle & features of Spectral Comparators: spectral filters composition & their selection, long-pass & band-pass filters, absorption spectra, emission spectra, uses of different light sources viz.: UV, IR, oblique, spot light, transmitted light. Electrostatic Detection apparatus : principle and working, electrostatic charge development, Coulomb's law, Electric field, Electric Potential, Capacitance and Capacitor.

7. Paper examination:

Physical comparison parameters, chemical composition, sizing & loading materials, tensile strength, comparison techniques : destructive & non-destructive. Serrated edges examination.

Examinations of physical evidences : Folds & Creases, Staples, Alpines, Paper clips marks, offset marks etc. and their significance.

Examination of printed labels, wrappers, rubber seal impressions, Facsimile document/ signature examination.

Examination of photocopied documents, extent and limitation of examination, Fax copy document examination,

Examination of scanned documents: process of scanning, identifying features.

Examination of charred documents: preservation and examination techniques involved.

8. Printed document examination:

Printing technology, identification of typewriter or printer involved, examination of type-script, classification of printers: Working & identification of Dot matrix, Inkjet and Laser jet printers, Thermal printers, identification of printed matter, examination of Letter press, Lithographic and Gravure processes of printing – working, their identification and their individual characteristics. Examination of computer printouts, Concept of digital signature.

Examination of security documents: Currency notes, Passport, Visa, Various identity cards, Stamp papers, travel documents, University/ Board certificates/ marksheets, their security features, different types of security features and their examination including watermarks, security fiber/threads /Ghost/imitated marks/ security printing, holograms, micro-printing, intaglio printing, latent image, OVI ink, thermal ink, etc. Examination of credit, debit and other plastic cards.

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Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks : 100
3. Number of Questions : 100
4. Duration of Paper : Two Hours
5. All Questions carry equal marks
6. There will be Negative Marking

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