

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2024

First Semester

Microbiology

Elective — FORENSIC SCIENCE

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Study of decomposition of body is known as

- (a) Forensic Entomology
- (b) Forensic Pathology
- (c) Forensic Chemistry
- (d) Forensic Anthropology

5. Regional Forensic Laboratories are not found at

- (a) Trichy, Tanjore and Tirunelveli
- (b) Coimbatore, Madurai and Ramnad
- (c) Salem, Vellore and Villupuram
- (d) Nageroil, Tenkasi and Erode

6. Staff Profile in Department of Forensic Science include

- (a) Scientific Staff
- (b) Technical Laboratory / Miscellaneous
- (c) Ministerial – General
- (d) All the above

7. p-dimethylaminocinnamaldehyde test (DMAC) is associated with

- (a) Semen
- (b) Saliva
- (c) Blood
- (d) Urine

8. Phadebas Test is other wise known as

- (a) p - dimethylaminocinnamaldehyde test (DMAC)
- (b) Alkaline Phosphatase Test
- (c) PSA Test
- (d) Alpha Amylase Test

2. The analysis of DNA to identify individuals and link them to a crime is known as

- (a) Forensic Entomology
- (b) Forensic Pathology
- (c) Forensic Toxicology
- (d) Forensic Genetics

3. The use of scientific evidences to analyse and interpret evidences in criminal cases is known as

- (a) Criminialistics
- (b) Forensic Medicine
- (c) Forensic Science
- (d) Criminology

4. Special Services of Forensic Science Department Includes

- (a) Technical consultancy to the Government revenue-earning Excise Department
- (b) Cases referred by the Officers of other (non-police) Departments and undertakings of the Government of Tamil Nadu; Officers of Central and State Governments presiding officers of High Court, criminal courts and civil courts where the Government of Tamil Nadu is not a party etc
- (c) Paternity Testing - a social scheme to aid the poor, deserted and helpless women of this country the centre established at FSD by April 11, 1985
- (d) All the above

9. Choose the INCORRECT statement(s) regarding Takayama Crystal Assay

- (a) It is a confirmatory test
- (b) The Takayama Crystal Assay, which forms a ferro protoporphyrin ring by a reaction between pyridine and the iron atom of the heme group
- (c) The Takayama reagent is added to a slide with a presumptive blood sample. The slide is dried at 115 degrees Celsius following the addition of the Takayama reagent. Then it is placed under a microscope and a positive result is the visualization of dark red, feathery crystals.
- (d) Semen is tested by this assay

10. Choose the correct statement(s), regarding DNA Isolation from blood samples

- (a) All centrifugation steps should be carried out at room temperature
- (b) 200 μ l of the whole blood yields 3-12 μ g of DNA
- (c) Preparation of buffy coat is recommended if a higher yield is required
- (d) All the above

11. The drawback(s) of Phenol-Chloroform Technique is / are
- It is time-consuming
 - Uses hazardous reagents
 - It has a greater risk of contamination
 - All the above
12. Choose the correct statement about STR
- Microsatellites are often referred to as short tandem repeats (STRs)
 - The term "microsatellite" was introduced later, in 1989, by Litt and Luty
 - Microsatellites are widely used for DNA profiling also known as "genetic fingerprinting" of crime stains (in forensics) and of tissues (in transplant patients)
 - All the above
13. Regarding inorganic Poison
- It involves metallic and non metallic
 - Chlorine, Bromine and Iodine are examples
 - Lead, Arsenic, Mercury and Antimony are examples
 - All

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14. Dry ash method is used for the extraction of following poison from Viscera
- Metallic poison
 - Volatile Poison
 - Non Volatile Poison
 - Vegetable Poison

15. Poison with garlic smell
- Arsine Compound
 - Phosphorous
 - Citric acid
 - Mercuric chloride

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Portray the recent scenario in forensic science.
- Or
- (b) Highlight the techniques employed by forensic scientists.
17. (a) Write about the objectives of central level forensic science labs.
- Or
- (b) Sketch the importance of mobile forensic labs.

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18. (a) Mention about forensic serology.
- Or
- (b) Point out the role of urine sample in forensic labs.
19. (a) What do you know about the applications PCR in forensic labs?
- Or
- (b) How do we solve paternity disputes through forensic techniques?
20. (a) What do you know about poison?
- Or
- (b) Outline the mode of action of poisons.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

21. (a) Indicate in detail about the branches of forensic science.
- Or
- (b) Discuss elaborately the duties of forensic scientists and the applications of forensic science.

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22. (a) List out the state level forensic labs and highlight their functions.
- Or
- (b) Clearly explain about forensic microbiology.
23. (a) Measure the importance of blood and semen in forensic serology.
- Or
- (b) Enumerate the diverse types of samples used by forensic scientists with their importance.
24. (a) PCR technique is a boon for forensic scientists – Support.
- Or
- (b) Describe the role of DNA fingerprinting in detail.
25. (a) Write an essay on forensic toxicology.
- Or
- (b) Discuss in detail medico legal postmortem and their examination.

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