C–1969

Sub. Code
99042

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Forensic Science

INSTRUMENTATION BIOCHEMICAL

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is stock solution?
2. What is ppm solution?
3. Write Abbe's equation.
4. What is a lens?
5. What are electrons?
6. Explain fluorescence.
7. What do you mean by relative affinity?
8. What is the basic principle of paper chromatography?
9. What is agglutination?
10. What are antigens?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the principle behind buffer solution.

Or

(b) What is Svedberg's unit? Explain.

12. (a) Sketch and label the diagram of the image formed in a convex lens when the object is at 2F.

Or

(b) Write a note on working of compound microscope.

13. (a) Write the principle of TLC.

Or

(b) How to choose the mobile phase based on mutual miscibility in TLC?

14. (a) What do you mean by polarised light?

Or

(b) Brief about the principle of florescence.

15. (a) Explain the principle of ELISA.

Or

(b) What are the advantages and disadvantages of capillary electrophoresis?

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Write a note on the types and working of centrifuges.

Or

(b) With sketch, explain the working and applications of comparison microscope.

17. (a) Write a detailed note on the working of SEM.

Or

(b) Brief about the functioning of IR microscope.

18. (a) Explain the working of HPLC.

Or

(b) What is electrophoresis? Explain.

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C–1970	Sub. Code
	99043

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Forensic Science

FORENSIC SEROLOGY AND DNA TYPING

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What do you mean by biological evidences?

2. What are the parts of Hair?

3. Explain the functions of WBC.

4. What is ABO grouping?

5. What are the functions of salivary amylase?

6. Brief about alternate light examination of semen.

7. What is mutation?

8. What is maternity index?

9. What do you mean by Y – STR?

10. What are genes?

Part B

$(5 \times 5 = 25)$

Answer **all** the questions.

11. (a) Brief about the collection and packing of blood samples.

Or

(b) Brief about the forensic significance of pollen/seeds.

12. (a) What do you mean by immunochemical reactions? Explain.

Or

(b) Write a note on the procedure of finding blood group from a dried blood stain.

13. (a) Explain the principle and working of o-tolidine test.

Or

(b) How to analyse 'semen without sperm'?

14. (a) Write a note on mitochondrial DNA.

Or

(b) Explain paternity and maternity index.

15. (a) Write a note on PCR.

Or

(b) What are alleles? How allele frequency is important?

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) A suspected hair sample is found from a crime scene. Explain the step-by step procedure when you have an admitted sample in hand.

Or

(b) Explain the principle and chemical reactions of the following.

(i) Takayama Test

(ii) Teichmann Test

17. (a) Explain the principle and chemical reactions of the following.

(i) Prostate specific Antigen

(ii) Fluorescein Test

Or

(b) Write the detailed procedure for the systematic analysis of saliva sample.

18. (a) Explain the following:

(i) Mitochondrial DNA

(ii) Mutation

Or

(b) Two ladies approached the court with an argument regarding the biological parenthood of a baby. As a scientist, how would you help the court?

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C–1971	Sub. Code
	99044

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Forensic Science

FORENSIC TOXICOLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What do you mean by ED 50?

2. Write any four examples for metallic poisons.

3. Snake venom is toxic only when injected not ingested. Explain.

4. Write the chemical reaction of Marquis Test.

5. Explain the Features of LSD.

6. Explain acid digestion

7. What is HPLC?

8. What do you mean by Brain-Blood Barrier?

9. What are the common poisons used in rat poisons?

10. How blood is preserved in case of alcohol poisoning?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) What are corrosive poisons?

Or

(b) What are systemic/systematic poisons?

12. (a) What is opium? Explain its active ingredients.

Or

(b) Explain Marquis test.

13. (a) Brief about the procedure of dry ashing.

Or

(b) Brief about the applications of IR spectroscopy in toxicology.

14. (a) Write a note on the metabolism of alcohol in body.

Or

(b) Write a brief note on pharmacodynamics.

15. (a) How viscera sample is collected in the case of alcohol poisoning?

Or

(b) What do you mean by gastric leverage?

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Write in detail the various chemical tests for methamphetamine.

Or

(b) Explain one chemical test for any four inorganic poisons.

17. (a) Write in detail, the working of AAS and its applications in toxicology.

Or

(b) What are metallic poisons? Write about their extraction procedures.

18. (a) What are cyanides? Explain their toxicity and chemical tests.

Or

(b) Write a detailed note on collection and preservation of viscera.

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