C–8595	Sub. Code
	99023

B.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Forensic Science

CRIME SCENE MANAGEMENT

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Define Crime.

2. What are secondary crime scenes? Provide examples.

3. Explain the application of midrange shots in crime scene photography.

4. With a rough sketch explain the inward spiral method of search.

5. How are fingerprints formed?

6. Brief about the physical development of fingerprints.

7. What is arson?

8. Compare and contrast hypothesis and theory.

9. What is the chain of custody?

10. List out four documents to be submitted to an FSL along with evidence.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write a note on different types of crime scenes.

Or

(b) List out the major classifications of evidence.

12. (a) Explain the advantages and disadvantages of the strip method of searching.

Or

(b) Write a detailed note on the application of search methods. Which search method is more suitable for a plane crash?

13. (a) Write a detailed note on the identification, collection and packing of semen samples from rape scene.

Or

(b) Explain the procedure of collection of tyre impressions.

14. (a) What is fire triangle? How to differentiate an arson from accidental fire based on fire triangle?

Or

(b) Write a note on stages of investigation.

15. (a) What are the factors to consider while packing evidence?

Or

(b) What is chain of custody? How to maintain it? Explain its importance.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain the duties of first responding officer, investigating officer and forensic expert in a crime scene.

Or

(b) Explain the following sketching methods in detail:

(i) Triangulation Method

(ii) Polar coordinate method

17. (a) Write in detail the procedure to identify point of origin from blood spatter. Also explain the procedure of collecting fresh blood from a crime scene.

Or

(b) What are fingerprints? Explain the powder method and any one chemical method of fingerprint collection.

18. (a) What is crime scene reconstruction? Explain its importance? Write a note on the procedure of accident scene reconstruction.

Or

(b) Explain:

(i) Sealing of evidence packets

(ii) Documents to be submitted to an FSL along with evidence.

———————

C–8596	Sub. Code
	99024

B.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Forensic Science

IMPRESSION ANALYSIS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What do you mean by compression tool marks?

2. How do tool marks get uniqueness?

3. What are the class characteristics of footwears?

4. Explain the application of lip prints.

5. How are ear prints useful in forensic science?

6. How to collect palm prints?

7. How many minutiae are required for matching fingerprints? Why?

8. Explain the logic behind not considering palm print evidence as strong as fingerprints.

9. What are the types of fingerprints?

10. How to digitally image fingerprints?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) What are tool marks? Explain different types of tool marks.

Or

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

12. (a) How footwear impressions are formed? What are the individual characteristics in footwear impressions?

Or

(b) Explain the collection of footwear impressions from snow.

13. (a) List out the features of loop type prints.

Or

(b) Compare whorl type prints and arch type prints.

14. (a) Explain the structure of skin.

Or

(b) By what age fingerprints are developed? Explain their biological functions.

15. (a) What are lip prints? How do they form? Explain their collection and packing.

Or

(b) How to present biometric evidence in a court of law?

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) How fingerprints are formed? Explain the one digit classification of fingerprints.

Or

(b) What are the different sketching methods? Explain their merits and demerits.

17. (a) Explain the principle and working of a comparison microscope.

Or

(b) What are the class and individual characteristics of fingerprints?

18. (a) Explain the class and individual characteristics of tool marks.

Or

(b) Explain the chemistry behind various chemical methods of fingerprint development.

———————

C–8597	Sub. Code 99025

B.Sc. DEGREE EXAMINATION, APRIL 2023.

Second Semester

Forensic Science

INSTRUMENTATION PHYSICAL

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is the electromagnetic spectrum?

2. How does an electromagnetic wave interact with matter?

3. What is scattering?

4. Explain the function of filters in spectroscopy.

5. What are anti stock lines?

6. What are the limitations of XRF?

7. What are the advantages of XRD?

8. List out the major issues of NAA.

9. What are daughter ions?

10. List out a few applications of mass spectroscopy in forensic science.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain density gradient method of analysis of soil.

Or

(b) Explain the principle of refraction.

12. (a) Write a note on the instrumentation of IR spectroscopy.

Or

(b) Explain the electron transition in UV V is spectroscopy.

13. (a) Explain Bragg's equation.

Or

(b) Compare and contrast fluorescence and XRF.

14. (a) What is Differential thermal analysis?

Or

(b) How to quantify a metal using voltammetry?

15. (a) Explain the working of batch inlet of mass spectroscopy.

Or

(b) Explain electron impact method of ionization.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) With special reference to interferometer, explain FTIR.

Or

(b) Explain the principle, working and application of UV-V is spectroscopy.

17. (a) Explain the principle and working of NAA.

Or

(b) Explain the basic principle and working of NMR.

18. (a) Explain the working of different mass analysers.

Or

(b) Explain the principle of mass spectroscopy. Also explain the working of the scintillation counter and Faraday cup.

———————

C–8598	Sub. Code
	99042

B.Sc. DEGREE EXAMINATION, APRIL 2023

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 serial dilution?

2. What is standard solution?

3. What do you mean by focal length?

4. Write any two forensic applications of stereo microscope.

5. What is polarised light?

6. Brief about IR radiation.

7. How separation happens in chromatography?

8. What is retention time?

9. What is coagulation?

10. What do you mean by antibody?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write the principle of centrifugation.

Or

(b) How pH meters work?

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

Or

(b) Write in detail the principle of microscopy.

13. (a) How SEM achieve great resolution than compound microscope?

Or

(b) Explain the working of fluorescent microscope.

14. (a) Explain the principle of GC.

Or

(b) Write a note on LC-MS.

15. (a) Brief about the application of UV in enzyme assay.

Or

(b) What is immobilized enzyme? Explain.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Write in detail, the principle and methodology of serial dilution making. Write its applications.

Or

(b) Explain in detail, the qualitative, quantitative and individualisation analysis in FS.

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

Or

(b) Brief about the functioning of the following:

(i) AFM

(ii) Polarised microscope

18. (a) Explain the working of GC.

Or

(b) What is TLC? Explain.

———————

C–8599	Sub. Code
	99043

B.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Forensic Science

FORENSIC SEROLOGY AND DNA TYPING

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is hair?

2. List any four examples of plant fibre.

3. What are the functions of RBC?

4. What is Bombay blood group?

5. List out the components of Semen.

6. What is luminol?

7. What are alleles?

8. What are the functions of DNA?

9. What is SNP in DNA analysis?

10. Write any four applications of DNA in forensic science.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain how human and animal hair are differentiated.

Or

(b) Write a note on the basic features of cotton fibre.

12. (a) Explain the procedure for blood grouping.

Or

(b) Compare and contrast precipitation and agglutination.

13. (a) Explain the principle and working of Kastle- Meyer Test.

Or

(b) Brief about the use of Christmas tree stain in semen analysis.

14. (a) How two organisms attain variations biologically? Explain.

Or

(b) How DNA profiling is used in forensic science?

15. (a) Brief about RFLP analysis of DNA.

Or

(b) Write a note on the legal standard of DNA admissibility.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain the chemical and physical tests used for the analysis of any two fibres you know.

Or

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

(i) Leucomalachite test

(ii) Tetra Methyl Benzidate test

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

(i) Seminal Acid Phosphate Test

(ii) Starch Iodine Test

Or

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

18. (a) With rough sketch, explain the physical and chemical structure of DNA.

Or

(b) Write in detail, the step-by-step analysis of DNA.

———————

C–8600	Sub. Code
	99044

B.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Forensic Science

FORENSIC TOXICOLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What do you mean by lethal dose?

2. Write any four examples of organic poisons.

3. Brief about the ingestion method of administration of poisons.

4. What is cocaine? How is it made?

5. Write any spot test for LSD.

6. What is homogenisation of samples?

7. Brief about acetone extraction.

8. What is active absorption?

9. What is pharmacokinetics?

10. What do you mean by viscera?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Define poison. Explain the concept 'Dose define the poison'.

Or

(b) What are irritant poisons? Give examples.

12. (a) What are barbiturates? Explain their features.

Or

(b) Write the classification of barbiturates.

13. (a) Explain the procedure of wet digestion method.

Or

(b) Brief about the application of UV spectroscopy in Toxicology.

14. (a) Explain passive and active absorption.

Or

(b) Brief about any two poisons that can be detected from their characteristic smell during post-mortem.

15. (a) What is antidote? How do they function?

Or

(b) Write in detail the various chemical tests for opiates.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) What are neurotoxins? Write their classifications.

Or

(b) Write a detailed note on various chromatographic techniques used in toxicology.

17. (a) What is snake venom? How snake venom tested?

Or

(b) Explain the toxicity of arsenic. Also write its chemical tests.

18. (a) What do you mean by extraction of poisons? Write any four extraction techniques you know.

Or

(b) Explain the procedure of packing viscera in case of suspected alcohol provisioning.

———————