C–7546	Sub. Code 99013

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

First Semester

Forensic Science

GENERAL FORENSIC SCIENCE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Forensic Science.

2. State principle of exchange.

3. What is GEQD?

4. List out any four functions of NDTL.

5. Mention any four functions of High Courts in India.

6. List out the characteristics of an indoor crime scene.

7. What do you mean by chain of custody?

8. Brief about the packing of biological evidence.

9. What is cross examination? What is the significance of it?

10. Brief about the expert testimony in a court of law.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note on the tools and techniques used in forensic analysis.

Or

(b) What are the applications of chromatography and spectroscopy in forensic science?

12. (a) Explain the various functions of NICFS.

Or

(b) Explain how DRDO helps in the progress of the defense sector of India.

13. (a) Explain the relationship between a forensic scientist and prosecutor.

Or

(b) Which are the various steps to be taken for the protection of crime scenes and evidence?

14. (a) What are physical evidences? Explain their importance. Write a note on the packing of evidence.

Or

(b) Write the procedure to find out the point of origin of blood from various blood drops.

15. (a) Explain the duties of a forensic scientist.

Or

(b) What are the powers and limitations of a forensic scientist when he deals with crime scenes?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the various principles of forensic science.

Or

(b) Which are the major divisions of a forensic lab? Explain their functions.

17. (a) What are the major objectives and functions of Fingerprint Bureau India?

Or

(b) Explain the organisational setup and functions of INTERPOL.

18. (a) Which are the documents required to send evidence to FSL for examination?

Or

(b) Write a note on the steps involved in the processing of a crime scene.

———————

C–7547	Sub. Code
	99014

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

First Semester

Forensic Science

GENERAL CHEMISTRY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What is electrophilic reaction?

2. What do you mean by isomerism?

3. Explain the term levo rotatory.

4. What do you mean by Z nomenclature

5. Write the general formula for carbohydrates.

6. How are alkaloids important in forensic science?

7. What do you understand from the term sodium pump?

8. List out the biological roles of calcium in the human body.

9. What is equivalent weight?

10. Explain normality and molarity.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain briefly about inductive effect.

Or

(b) Explain briefly about addition reactions with examples.

12. (a) How to differentiate chiral and achiral carbon molecules?

Or

(b) Explain ciz- trans isomerism with example.

13. (a) What is mutarotation? Briefly explain with one example.

Or

(b) Elucidate the open chain structure of glucose.

14. (a) Explain the structure of ferrocene.

Or

(b) How Mg^{+} works in the energy production by chlorophyll?

15. (a) What are errors in laboratory analysis? Explain the type of errors in analytical chemistry.

Or

(b) Write a note on the merits and demerits of continuous extraction.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) What are stereoisomers? Explain their structure and properties.

Or

(b) Compare and contrast the various extraction methods? Which one is suitable for forensic applications in your opinion? Why?

17. (a) With proper structure explain the chemical bond in Methyl lithium and Zeiss salt.

Or

(b) Explain the properties of enantiomers.

18. (a) Explain the structure of maltose and lactose.

Or

(b) Explain different types of chemical reactions with appropriate examples.

———————

C–7548	Sub. Code
	99015

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

First Semester

Forensic Science

GENERAL BIOLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Write the function of mitochondria?

2. What is golgi complex?

3. Draw the structure of sucrose.

4. What is meant by polysaccharides?

5. What is microbial forensics?

6. Define sterilisation.

7. Define flocculation.

8. What are the functions of antibodies?

9. How excretion happens in cells?

10. What do you mean by cell physiology.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write a short note on the chemical composition of cell.

Or

(b) Write a note on nucleus and mitochondria.

12. (a) Write the classification and functions of proteins.

Or

(b) What is the biological importance of carbohydrates.

13. (a) What is the forensic significance of microorganisms?

Or

(b) What is the role of microbes in causing diseases?

14. (a) Write a short note on production of antibodies. Describe any one of the antigen antibody reactions.

Or

(b) Describe the structure and function of the antigen antibody complex.

15. (a) Briefly explain the physiology of cellular and tissue physiology.

Or

(b) Write a note on fluids and transport in a system.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Describe membrane structure. Explain the cellular transport techniques.

Or

(b) Write a note on the following.

(i) Ribosomes

(ii) Nucleus

(iii) Nucleolus

(iv) Endoplasmic Reticulum

(v) Chloroplast

17. (a) Explain in detail the classification structure, function of carbohydrates.

Or

(b) Explain in detail the classification, types and structure of lipids with examples.

18. (a) How to identify microorganisms? Write a note on Koch's postulates.

Or

(b) Explain various Cultural techniques.

———————

C–6304	Sub. Code 99023

B.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Forensic Science

CRIME SCENE MANAGEMENT

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define evidence.

2. List out any four duties of first responding officer.

3. Explain the logic behind long range photography in crime scenes.

4. List out the advantages of the triangulation method of sketching.

5. How are bite marks collected?

6. What is trace evidence?

7. What do you mean by hypothesis?

8. List out the stages of investigation.

9. What do you mean by lead questions?

10. What all information is available from FIR?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the steps of crime scene investigation.

Or

(b) What is the principle of exchange? Explain its application in crime scene examination.

12. (a) You are assigned to conduct a search inside a house. Which pattern you will choose. Explain the logic behind it.

Or

(b) How are lip prints collected?

13. (a) Explain the procedure of collection and packing of explosive materials.

Or

(b) Which are the major crime scenes from which hair is likely to be available as evidence? How to collect hair evidence?

14. (a) How handwriting samples are collected from suspects?

Or

(b) What is crime scene reconstruction? How to reconstruct a crime scene with the help of computers?

15. (a) Write a sample forwarding letter to forward evidences to state FSL of Tamil Nadu.

Or

(b) Zip bags shall not be used for packing of biological evidence and paper bags are preferred. Explain the reason.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the following types of evidences:

    (i) Corroborate evidence

    (ii) Conclusive evidence

    (iii) Testimonial evidences.

Or

(b) Explain in detail the actions of the first responding officer.

17. (a) Write a detailed note on strip, spiral and zone method of searching. Explain their applications.

Or

(b) Write in detail the procedure of crime scene photography.

18. (a) Explain the collection procedure of

    (i) Tool Marks

    (ii) Fibre

    (iii) Paint.

Or

(b) What are the documents to be submitted to an FSL along with evidence? Explain in detail.

———————

C–6305	Sub. Code 99024

B.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Forensic Science

IMPRESSION ANALYSIS

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are tool marks?

2. How to develop the negative caste of a tool mark?

3. How to collect lip prints?

4. Explain the scope of footwear impression.

5. What is ear print?

6. How fingerprints are transferred?

7. What are fingerprints?

8. What is the biological function of fingerprints?

9. Explain the features of the brushes used for collecting fingerprints.

10. What are plastic prints?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the types of tool marks? Explain their formation.

Or

(b) Explain the working of the comparison microscope.

12. (a) How to recover footwear impressions from soil?

Or

(b) How footwears attain individuality?

13. (a) Explain about the uniqueness of palm prints.

Or

(b) How to collect lip print from a suspect?

14. (a) What are the chemical methods of development of fingerprints?

Or

(b) How to develop fingerprint from a dead body'?

15. (a) Explain the various visualisation techniques for fingerprints.

Or

(b) Make a note on AFIS.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) How does a tool attain its individuality? Do you think prolonged use changes the individuality of the tool? Substantiate your answer.

Or

(b) What are the class characteristics of a tool? Explain the way in which the comparison microscope is used for the comparison of individual characteristics.

17. (a) What are the different methods of fingerprint development? Explain in detail.

Or

(b) Write a detailed note on the ninhydrin method and iodine fume methods of fingerprint development.

18. (a) List out with rough sketches the minutiae of fingerprints.

Or

(b) What is Henry's system of fingerprint classification?

———————

C–6306	Sub. Code
	99025

B.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Forensic Science

INSTRUMENTATION PHYSICAL

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is spectroscopy?
2. What is density?
3. What do you mean by refractive index?
4. Explain the physics behind fluorescence.
5. State Beer- Lambert's law.
6. List the applications of UV spectroscopy.
7. What is the major application of FTIR?
8. What is the principle of XRF?
9. How does the NAA work?
10. List out the forensic application of polarography.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the principle of phosphorescence.

Or

(b) What is refractive index? How to find out the RI of a broken glass piece?

12. (a) State and derive Beer - Lambert's law.

Or

(b) Explain the instrumentation of Raman spectroscopy.

13. (a) Explain the principle of AAS.

Or

(b) Explain the instrumentation of NAA.

14. (a) What is the principle of XRD?

Or

(b) Explain the working of NMR spectroscopy.

15. (a) Explain the principle of mass spectroscopy.

Or

(b) What is the Fast Atom Bombardment (FAB) method of ionisation?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain any four ionisation techniques for mass spectroscopy.

Or

(b) Explain about any three detectors of mass spectroscopy.

17. (a) Explain the principle and instrumentation of pulse polarography.

Or

(b) Explain the principle, working and application of AAS.

18. (a) Computer the working of quadrupole mass analyser and time of flight analyser.

Or

(b) Explain the fingerprint region of IR spectroscopy? What do you mean by FTIR? Explain.

———————

C–7549	Sub. Code
	99032

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Third Semester

Forensic Science

FORENSIC PHYSICS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Glass is not solid. Explain.

2. Explain the process of weathering.

3. What is comparison microscope?

4. How to perform ignition test for soil?

5. Write the chemical composition of paint.

6. How to collect cement samples for analysis?

7. What is IR spectroscopy?

8. Write about the polishing procedure for restoration of erased numbers.

9. What is the refractive index?

10. Explain the application of differential thermal analysis.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the procedure for the analysis of density of glass.

Or

(b) How to find out the refractive index of a glass piece?

12. (a) Explain differential thermal analysis technique.

Or

(b) What is the turbidity test of soil?

13. (a) How is the quality of bitumen analysed?

Or

(b) Write a note on the compressive strength test of bricks.

14. (a) What is magnetic restoration of erased numbers?

Or

(b) Explain the efficiency of etching restoration in the restoration of engraved marks. Substantiate your answer.

15. (a) What are different types of paints? Explain their differences.

Or

(b) What are the class characteristics of paint? How to examine them?

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain the principle and procedure of TLC examination. Explain the TLC analysis of paint.

Or

(b) Explain all the microscopic tests for paint.

17. (a) How microchemical tests are performed with paint?

Or

(b) Explain the various tests for soil for its individualisation.

18. (a) Write the principle and procedure of (i) Beckline method (ii) Density gradient method.

Or

(b) Explain the chemical etching of Copper, Steel and aluminium.

———————

C–7550	Sub. Code
	99033

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Third Semester

Forensic Science

QUESTIONED DOCUMENT EXAMINATION

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Define the term 'document' in accordance with Indian Evidence Act.

2. List out any four situations in which authenticity of a document comes under question.

3. What are the major factors to consider while giving testimony in court as a document expert?

4. Explain the concept of ethics for document experts.

5. Define the term 'alteration' in the context of questioned document examination.

6. What are chemical erasures? Give examples.

7. What is intaglio printing in currency notes?

8. Explain the term see through register in currency notes.

9. List out any few class characteristics of typewriters.

10. What is rubber stamping?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) How do handwriting acquire individuality?

Or

(b) Explain the scope and application of the handwriting examination.

12. (a) Explain the preliminary examination of questioned documents.

Or

(b) What are the major individual characters of handwriting?

13. (a) What do you mean by plastic currency? Explain their security features.

Or

(b) Write a note on the security features of stamp papers.

14. (a) Explain the various spot tests used for the analysis of ink.

Or

(b) What are the major features of ball point pen ink?

15. (a) Explain the class and individual characters of Laser Printers.

Or

(b) Explain the ways in which the age of a document can be forged.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) How is handwriting developed? What are the factors that affect the development and change in handwriting?

Or

(b) How handwriting acquires identity. Explain the various principles of handwriting which are useful in the individualisation.

17. (a) Write a detailed note on the conduct, presentation and interactions of a document examiner in the court.

Or

(b) Explain the professional ethics for the document analysis. Write in detail the Do's and Don'ts while handling a document.

18. (a) Explain the terms with examples: (i) Alterations (ii) Obliteration (iii) Chemical erasure (iv) Additions

Or

(b) Explain in detail the various types of forgeries in handwriting.

———————

C–7551

Sub. Code
99034

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Third Semester

Forensic Science

AUDIO AND VIDEO ANALYSIS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What is an LR circuit?

2. Explain the term noise.

3. What is digital image processing?

4. What do you mean by fps in video?

5. Write a note on handling digital evidence.

6. Mention any four softwares used for audio- video analysis.

7. What are active phonemes?

8. What do you mean by prosodic features?

9. Explain the hidden Markov model.

10. Write a note on admissibility of voice evidence.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the working of high pass filters.

Or

(b) What is diffraction of sound? How to reduce it?

12. (a) Explain the procedure of watermarking. Explain its role.

Or

(b) What is the step by step procedure for cctv video analysis.

13. (a) Write a note on exporting video files as image files.

Or

(b) List a few video analysis softwares. Explain in detail the role of 'autopsy' in forensic science.

14. (a) What is forensic linguistics? How to use it in speaker identification?

Or

(b) Explain the structure and activity of the human vocal chord.

15. (a) What are the different types of possible errors in speaker identification analysis.

Or

(b) Explain vector quantisation.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) What do you mean by acoustics? Explain in detail the various acoustic characters of the environment.

Or

(b) What do you mean by the term 'format'? Explain various formats of audio and video files.

17. (a) What is video production technology? How are videos produced?

Or

(b) Explain the procedure, safety measures and handling methods of digital evidence?

18. (a) Explain different methods of automatic speaker identification.

Or

(b) What is the likelihood ratio? Explain the interpretation of likelihood ratio. Also solve the following : Patient returning from a vacation to Rio presents with a fever and joint pain. Past data tells you that 70% of patients in your practice who return from Rio with a fever and joint pain have Zika. The blood test result is positive, with a likelihood ratio of 6. To calculate the probability the patient has Zika:

———————

C–6310	Sub. Code
	99042

B.Sc. DEGREE EXAMINATION, APRIL 2022

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 are buffers?

2. Explain the principle of centrifugation.

3. Draw the ray diagram of compound microscope.

4. Explain applications of stereo microscope in forensic science.

5. Explain the sample preparation of fluorescent microscope.

6. Why the images of SEM is always seen as black and white?

7. Brief about the stationary phases used in TLC.

8. Brief about the columns used in HPLC

9. What is SDS electrophoresis?

10. Brief about precipitin reaction.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) What is pH? How do buffer solutions work?

Or

(b) Explain the working of density gradient centrifugation.

12. (a) Write a note on the working of stereo microscope.

Or

(b) Explain the working and applications of comparison microscope.

13. (a) What is a transmission electron microscope? Explain its applications.

Or

(b) Explain the working of Atomic Force Microscope.

14. (a) Explain the principle and working of HPLC.

Or

(b) Compare and contrast TLC and HPTLC.

15. (a) Explain the working of PAGE electrophoresis.

Or

(b) Write a note on the working of crossover electrophoresis.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain the procedure of making standard solutions and serial dilutions. Also explain the applications of serial dilutions.

Or

(b) Explain in detail the working of a comparison microscope with the help of a rough diagram.

17. (a) Explain the principle, working, and interpretation of chromatograms in the case of GC.

Or

(b) Explain the working of LC-MS in detail.

18. (a) Explain Abbe's equation. Also explain the working of compound microscopes.

Or

(b) What is electrophoresis? Explain its principle. How it is used for DNA analysis?

———————

C–6311	Sub. Code
	99043

B.Sc. DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Forensic Science

FORENSIC SEROLOGY AND DNA TYPING

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is medullary index?
2. List the different types of fibres.
3. Brief about the composition of human blood.
4. What is the Bombay blood group?
5. Write the procedure of the benzidine test for blood.
6. What are the constituents of semen?
7. What are alleles?
8. What is DNA profiling?
9. What is PCR?
10. Explain the importance of Y STR.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Compare and contrast human and animal hair.

Or

(b) Compare and contrast head hair, face hair and pubic hair in humans.

12. (a) Explain the principle and procedure of blood grouping.

Or

(b) Write the differences between agglutination, and precipitation.

13. (a) Explain the absorption elution method of blood analysis.

Or

(b) Explain the chemical tests for urine.

14. (a) Explain the functions and forensic significance of mitochondrial DNA.

Or

(b) What is the paternity index? How to calculate it?

15. (a) Explain the RFLP system of DNA analysis.

Or

(b) Explain STR method of DNA analysis.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the visual, microscopic and spectroscopic analysis of fibres.

Or

(b) What are immunochemical reactions? Explain the working of electrophoresis of blood.

17. (a) Explain any two presumptive tests and one confirmatory test for blood.

Or

(b) Explain the microscopic and acid phosphatase tests of semen. Explain the forensic significance of semen.

18. (a) Explain in detail the procedure of DNA profiling.

Or

(b) With suitable diagrams, explain the structure of DNA.

———————

C–6312	Sub. Code 99044

B.Sc. DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Forensic Science

FORENSIC TOXICOLOGY

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define poison.

2. List out any four modes of drug administration.

3. What is charas?

4. Expand MDMA. Name the category of drugs in which MDMA belongs.

5. What is water extraction?

6. Explain the function of separating funnels.

7. What is pharmacokinetics?

8. What is LD50 and ED50?

9. What is Antidote?

10. Explain the basic procedure of stomach washing.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) With examples, explain the nature and functioning of volatile organic poisons.

Or

(b) What is chronic poisoning? What are the common poisons used for chronic poisoning? Explain their general features.

12. (a) What are the features of accidental poisons? Give examples.

Or

(b) What is opium? Which are the major derivatives of opium?

13. (a) Explain the general procedure of dry ash extraction of poisons. Name a few poisons that could be extracted via dry ash method.

Or

(b) Write a note on the principle and procedure of solvent extraction of poisons.

14. (a) Explain different types of absorption. Also explain the different sites of absorption

Or

(b) Explain the various parenteral routes of drug administration.

15. (a) What are the major symptoms of methanol poisoning. Explain the first aid to be provided in the case of alcohol poisoning.

Or

(b) How to collect viscera samples to be collected and packed in the case of HCl poisoning?

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) List out with one example each of all 10 types of poisons based on their chemical nature.

Or

(b) Explain in detail the various enteral and parenteral routes of administration of drugs.

17. (a) What is opium? Explain the forensic tests for opium derivatives.

Or

(b) What are depressants? Explain the physical and psychological effects of barbiturates.

18. (a) What are antidotes? Explain the various classes of antidotes.

Or

(b) Explain the various methods of poison extraction from viscera.

———————

C–7555	Sub. Code 99051

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Forensic Science

FORENSIC BALLISTICS AND TOOL MARKS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define bore.

2. What is calibre?

3. What are the components of primer. Explain their role.

4. What is double base powder?

5. What do you mean by gyroscopic equilibrium?

6. What is temporary cavity?

7. What is tattooing?

8. Explain the composition of GSR

9. What do you mean by class characteristics?

10. What is a comparison microscope?

Part B (5 × 5 = 25)

Answer **all** questions,

11. (a) Explain the working of flintlock mechanism.

Or

(b) How is rifling made inside a barrel?

12. (a) Explain degressive and progressive burning.

Or

(b) With the help of Newton's law of motion, explain the phenomenon of recoil.

13. (a) With the help of rough trajectory, find out the equation for Maximum range of a bullet.

Or

(b) Write a note on temporary and permanent cavity.

14. (a) Explain the principle of finding the range of firing using firearm discharge residue.

Or

(b) Explain the AAS method of GSR analysis.

15. (a) Write the procedure of lifting tool marks from a hard surface.

Or

(b) What are the different types of tool marks? Explain them.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail the salient features of Arms Act 1959.

Or

(b) Write in detail the components of ammunition.

17. (a) What are shock waves? How are shock waves generated and transferred? Explain the factors that determine the destructive effects of shock waves.

Or

(b) Explain in detail the collection, testing and interpreting gunshot residue.

18. (a) How are tool marks compared? Explain the science behind the uniqueness of tool marks.

Or

(b) What are the different types of firearms based on loading and action mechanism?

———————

C–7556	Sub. Code
	99052

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Forensic Science

RESEARCH METHODOLOGY AND STATISTICS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is qualitative research?

2. What do you mean by empirical research?

3. What is null hypothesis?

4. What is research design?

5. What do you mean by sampling?

6. What is snowball sampling?

7. What is population mean?

8. What is hypothesis?

9. What do you mean by standard deviation?

10. What is SPSS?

Part B (5 × 5 = 25)

Answer **all** questions

11. (a) Brief about ethics in criminal justice research.

Or

(b) Compare qualitative and quantitative research.

12. (a) What are the stages of research?

Or

(b) Define hypothesis. What are the different types of it?

13. (a) Compare probability and non probability samples.

Or

(b) What is secondary data? List out situations in which secondary data is used over primary data.

14. (a) What do you mean by grouped and ungrouped data?

Or

(b) What is class interval and class width?

15. (a) What is a histogram? Explain its applications and limitations.

Or

(b) What is standard deviation? Explain its formula.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail the various research methodologies used in forensic science.

Or

(b) Explain in detail the various methods of data collection.

17. (a) What do you mean by sampling? Explain the various types of sampling with their advantages and disadvantages.

Or

(b) What do you mean by multivariate analysis? Explain its types.

18. (a) What is SPSS? What are its features?

Or

(b) Explain various measures of dispersion in detail.

———————

C–7557	Sub. Code 99053

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Forensic Science

FORENSIC BIOLOGY AND MEDICINE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is inquest?

2. What are the conditions in which magisterial inquest is required by law?

3. What is suspended animation?

4. Define death medically.

5. What are aberrations? How to identify them?

6. How to identify incised wounds?

7. Name the parts of the hair shaft?

8. Brief about the significance of insects in forensic science.

9. What are pug marks? Explain its uses.

10. What is animal poaching?

Part B (5 × 5 = 25)

Answer **all** questions,

11. (a) Write a note on various medical evidence encountered during postmortem examination.

Or

(b) Brief about the procedure of medicolegal autopsy.

12. (a) Brief about the history of forensic medicine in India.

Or

(b) What is euthanasia? Explain its legality in India.

13. (a) Explain the procedure of medical examination of victims of sexual abuse.

Or

(b) Explain the symptoms of hypothermia.

14. (a) Brief about the general anatomy of arthropods.

Or

(b) Explain the morphology of human hair.

15. (a) Write a note on the salient features of red data book.

Or

(b) Brief about the salient features of the wild life protection act 1972.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail the postmortem changes that happen to the body.

Or

(b) Define death. Explain somatic and cellular death. How to determine the time since death through postmortem.

17. (a) Explain in detail the types and characteristics of various mechanical wounds.

Or

(b) Explain various types of unnatural sexual offences and sexual perversions according to Indian laws.

18. (a) Explain in detail the various preliminary examinations of fibre.

Or

(b) Write a detailed note on identifying the species, gender, age and individual characters of wild animals from pug marks.

———————

C–7558	Sub. Code
	99054

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Forensic Science

FORENSIC ANTHROPOLOGY AND ODONTOLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define forensic anthropology.

2. What is ossification?

3. What are osteoblasts?

4. How to differentiate human and animal skeleton based on foramen magnum?

5. Write the dental formula of adult humans.

6. Brief about the chemistry of bones.

7. Explain the working of facial superimposition.

8. Write the milk detention formula of humans.

9. What is forensic odontology?

10. Brief about the eruption of milk detention in humans.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Brief about the forensic significance of bones.

Or

(b) Brief about different parts of the human skeletal system.

12. (a) Compare the anatomy of male and female pelvis.

Or

(b) Compare the anatomy of human and animal skulls.

13. (a) Brief about different types of ossifications.

Or

(b) Explain the procedure of collection and packing of skeletal remains from the crime scene.

14. (a) Write a note on craniofacial superimposition.

Or

(b) Write a note on the application of MRI scan in facial reconstruction.

15. (a) Brief about the procedure of exhumation in investigations.

Or

(b) How dental impressions are used for individual identification?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the structure and function of the human skull.

Or

(b) How is age determined from skull ossification.

17. (a) Explain the anatomy and functions of clavicle and sternum.

Or

(b) Explain in detail the anatomy and functions of the human vertebral column.

18. (a) Explain the procedure of age determination from dentition.

Or

(b) Explain the procedure to determine race from skeletal remains.

———————

C–7559	Sub. Code
	99055

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Forensic Science

STATISTICS FOR FORENSIC SCIENCE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What do you understand if probability is 0.5?

2. Define events in statistics.

3. What do you mean by multinomial distribution?

4. Write the general formula of poisson distribution. Explain each term

5. What do you mean by likelihood ratio?

6. What is inverse fallacy?

7. What do you mean by transfer probabilities?

8. How to evaluate non matching evidence?

9. What do you mean by transposed conditional during trial?

10. Explain the types of defence fallacies raised in court.

Part B (5 × 5 = 25)

Answer **all** questions,

11. (a) There are 5 green 7 red balls. Two balls are selected one by one without replacement. Find the probability that first is green and second is red.

Or

(b) Define probability. What do you mean by dependent, independent and mutually exclusive events?

12. (a) Explain beta binomial distribution in detail.

Or

(b) What is hypergeometric distribution? Explain.

13. (a) What is probability of getting a sum of 7 when two dice are thrown?

Or

(b) What is the coefficient of determination?

14. (a) Explain regression in detail.

Or

(b) What is confidence interval? Explain

15. (a) What is significance testing?

Or

(b) What is empirical probability?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) List out various types of probabilities. Give examples for each.

Or

(b) What is normal distribution? How t test is applied in normal distribution?

17. (a) You grow 20 crystals from a solution and measure the length of each crystal in millimeters. Here is your data 9, 2, 5, 4, 12, 7, 8, 11, 9, 3, 7, 4, 12, 5, 4, 10, 9, 6, 9, 4. Calculate the sample standard deviation of the length of the crystals.

Or

(b) Explain the defender fallacy in detail.

18. (a) Explain prosecutor fallacy in detail.

Or

(b) Explain the terms: Population, sample and distribution.

———————

C–7013	Sub. Code
	16/17/23/25/ 26/27/29

COMMON FOR ALL U.G DEGREE COURSES
EXAMINATION, NOVEMBER 2022

First/Second Semester

ENVIRONMENTAL STUDIES

(2019/2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Nonrenewable resources
2. Ecosystem
3. Food Chain of forest ecosystem.
4. Pandemic Emergencies.
5. Red Data Book
6. Hot spots
7. Climate Change
8. Deforestation
9. Biodiversity
10. Acid Rain

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Differentiate renewable and nonrenewable energy resources.

Or

(b) Write notes on structure and functions of grassland ecosystem.

12. (a) Write notes on Food Webs of Forest Ecosystem with suitable examples.

Or

(b) Write notes on Genetic, Species and Ecosystem Diversity.

13. (a) Write short notes on Food resources and its problems associated with them.

Or

(b) Write notes on land resources and problem associated with them.

14. (a) Write notes on thermal pollution.

Or

(b) Write notes on energy pyramids with suitable examples.

15. (a) Explore the threats to biodiversity.

Or

(b) Write note on man-made disaster with special reference to strike.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Write an essay on multidisciplinary nature of environmental studies and about the need for public awareness on environment.

Or

(b) Write an essay on Water Resources and problem associated with over-utilization of various water resources.

17. (a) Write an essay on Biogeographical classification of India.

Or

(b) Write an essay on values of biodiversity.

18. (a) Write an essay on causes, effects and control measures of water pollution.

Or

(b) Enumerate various strategies in managing disasters caused due to natural calamities.

———————

C–5664	Sub. Code
	16/17/23/25/ 26/27/29

Common for All U.G. B.Sc./B.B.A. DEGREE EXAMINATION, APRIL 2022

First/Second Semester

ENVIRONMENTAL STUDIES

(2019/2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. ZSI.

2. WII.

3. What is renewable energy?

4. Food web.

5. Pyramid of numbers in aquatic ecosystem.

6. Red data book.

7. List out any five Endemic species of India.

8. List out marine pollutants.

9. *Ex Situ* Conservation.

10. Enlist Option Values of Biodiversity.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write notes on definition, scope and importance of environmental studies.

Or

(b) Write notes on soil erosion and desertification.

12. (a) Write notes on energy flow in the ecosystem.

Or

(b) Write notes on threads to biodiversity.

13. (a) Write notes on Biodiversity at Global, National and Local levels.

Or

(b) Write notes on various strategies of conservation of Biodiversity.

14. (a) Write notes on ecological pyramids.

Or

(b) Write notes on air pollution.

15. (a) Write notes on noise pollution.

Or

(b) Write notes on effects and control measures of nuclear hazards.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Write an essay on the multidisciplinary nature of Environmental Studies.

Or

(b) Write an essay on the following resources with special emphasis to how they are overexploited/utilized which in turn damage the environment, (i) Forest Resources and (ii) Food Resources.

17. (a) Write an essay on "India is a mega-diversity nation".

Or

(b) Write an essay on Biodiversity and their values.

18. (a) Write an essay on causes, effects and control measures of (i) Marine Pollution and (ii) Water Pollution.

Or

(b) Write an essay on concept, structure and function of ecosystem.

———————