

C-5227

Sub. Code

99013

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Forensic Science

GENERAL FORENSIC SCIENCE

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. List the applications of simple microscope in crime scenes.
2. What are RFSLS?
3. List any four functions of DRDO.
4. Mention the primary functions of CCMB.
5. What do you understand from the term correctional administration?
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, choosing either (a) or (b).

11. (a) Explain the law of progressive change. How does it affect a forensic scientist? What shall be done about it?

Or

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

12. (a) Write a note on fingerprint Bureau, India.

Or

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

13. (a) How defense counsel and forensic scientists interact in a courtroom?

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.

Or

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

15. (a) How does the media play an important role in the investigation process?

Or

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

Part C

(3 × 10 = 30)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain all important tools and techniques used in forensic science? What are the essential features of any techniques to be incorporated into a forensic lab?

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) Elaborate on the contribution of NICFS to the field of forensic science.
18. (a) Which are the documents required to send evidence to FSL for examination?

Or

- (b) Prepare a sample model of forensic report to be sent to the Hon. High court of Tamil Nadu.

C-5228

Sub. Code

99014

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Forensic Science

GENERAL CHEMISTRY

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. How to name cycloalkanes?
2. What are aromatic compounds?
3. What is the Fischer projection formula?
4. What are meso compounds?
5. Explain the structure of disaccharides.
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, choosing either (a) or (b).

11. (a) Write a note about bond cleavage.

Or

- (b) Explain briefly about addition reactions with examples.

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

Or

- (b) Comment on the plane of symmetry with an 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** questions, choosing either (a) or (b).

16. (a) With suitable examples explain the terms molarity, normality, equivalent weight and oxidation.

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 biological functions of Ca^{2+} and Mg^{2+} in animals and plants.
18. (a) Explain the structure of maltose and lactose.

Or

- (b) Comment on geometric isomerism. Explain how to determine the configuration of geometric isomers.

C-5229

Sub. Code

99015

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Forensic Science

GENERAL BIOLOGY

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is nucleolus?
2. What is diffusion?
3. Sketch the structure of maltose.
4. What are the biological importances of fructose?
5. List out the types of microorganisms.
6. What are the common methods of sterilization?
7. What is antibody?
8. What is the basic chemistry behind agglutination?
9. What is a cell?
10. How waste materials are managed in a cell?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is the principle of passive diffusion?

Or

- (b) How is the structure of the cell membrane arranged to facilitate material transport?

12. (a) What is sucrose? Explain its structure.

Or

- (b) What are the properties of protein?

13. (a) What are bacterias? How are they different from viruses?

Or

- (b) Explain the forensic importance of microorganisms.

14. (a) What are immunoglobulins? Explain their functions.

Or

- (b) What do you mean by immunoelectrophoresis? Explain its working.

15. (a) What are the systems involved in the locomotion of humans? Explain their role.

Or

- (b) What is an endocrine system? Explain its major functions.

Part C

(3 × 10 = 30)

Answer **all** questions, choosing either (a) or (b).

16. (a) What is the immune system? How does it function in the human body?

Or

- (b) Explain the general working of immunoassay with special reference to ELISA.

17. (a) Discuss various methods of agglutination.

Or

- (b) Compare and contrast immunoprecipitation and immunoelectrophoresis

18. (a) List out the major cell organdies. Explain their functions.

Or

- (b) What are the different types of carbohydrates? Explain the biological importance of each of them.

C-5234

Sub. Code

99032

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Forensic Science

FORENSIC PHYSICS

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is glass?
2. What do you mean by beekline?
3. Name the solvents used for the density gradient test.
4. What is ignition loss?
5. What is cement?
6. Explain the composition of concrete.
7. What are the various layers in automobile paints?
8. What is the basic principle of AAS?
9. Explain the term chemical etching.
10. What is the chemical composition of etching solution for iron?

Part B

(5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain 4R rule.

Or

(b) How glass is made?

12. (a) How soil is formed?

Or

(b) Explain the ignition test of soil.

13. (a) What are tool marks? Explain its types.

Or

(b) Explain the working of a comparison microscope.

14. (a) Write a note on automobile paint.

Or

(b) Explain the relevance of IR spectroscopy in paint.

15. (a) Explain the solubility test for paint.

Or

(b) What is the chemical composition of cement? What are its features?

Part C

(3 × 10 = 30)

Answer **all** the questions.

16. (a) What is the refractive index? Explain the different methods to determine the RI of a glass piece?

Or

- (b) Explain the different tests on glass to chemically identify it.

17. (a) Explain the principle and procedure of the density gradient method.

Or

- (b) Explain the elemental profiling of soil.

18. (a) How do tools receive unique marks? Explain.

Or

- (b) Explain the various lifting methods of tool marks.

C-5235

Sub. Code

99033

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Forensic Science

QUESTIONED DOCUMENT EXAMINATION

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What do you mean by questioned documents?
2. How to collect reference/admitted samples from the suspect?
3. What is forgery by memory?
4. What are the types of erasers? List out examples.
5. What is e signature?
6. List out any few security features of Indian currency notes.
7. Explain the term 'gooping'.
8. What is the role of ALS in document examinations?
9. What are the different types of typewriters?
10. Brief about the working of dot matrix printers.

Part B

(5 × 5 = 25)

Answer **all** the questions.

11. (a) What is ESDA? Explain its functioning and applications.

Or

- (b) Write a note on GEQD,

12. (a) List out the major class characteristics of handwriting. Explain any four of them.

Or

- (b) What do you mean by obliteration of a document? Explain with examples.

13. (a) Explain the various sections related to counterfeiting notes in IPC.

Or

- (b) What are steps taken to ensure the security of the Indian passport? Explain.

14. (a) Explain the procedure to check the age of a document.

Or

- (b) How to uniquely identify rubber stamps? Explain.

15. (a) What are facsimile machines? What is their relevance in forensic science?

Or

- (b) List out the ways in which a printer can be identified from a printed document.

Part C

(3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain the working and applications of the following instruments
- (i) Various microscopes
 - (ii) ALS
 - (iii) Photography.

Or

- (b) Explain the principle and procedure of chromatographic analysis of inks.
17. (a) List out and explain the major features that play important roles in the individualisation of handwriting.

Or

- (b) List out the various security features in Indian currency notes. Explain them.
18. (a) Explain the techniques used to determine the age of various documents.

Or

- (b) What do you mean by disguised handwriting? What are the common ways adapted to disguise handwriting? How to identify a disguised handwriting?
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C-5236

Sub. Code

99034

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Forensic Science

AUDIO AND VIDEO ANALYSIS

(2020 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is diffraction?
2. Explain CR circuit.
3. What is video technology?
4. Explain the role of watermarking.
5. What do you mean by compression of audio?
6. What is cloning of a disk?
7. What is forensic phonetics?
8. Explain the vocal code activity in humans.
9. Explain the term likelihood ratio.
10. What do you mean by voice print identification?

Part B

(5 × 5 = 25)

Answer **all** the questions.

11. (a) What are analog signals? Explain their features.

Or

- (b) Write a note on various video formats.

12. (a) Explain about visual examination of video.

Or

- (b) What is digital watermarking? Explain the procedure.

13. (a) Explain the procedure of authentication of a video file.

Or

- (b) Write the procedure of recovery of a deleted file.

14. (a) How does the human vocal cord produce sound?

Or

- (b) What are Segmental and Suprasegmental phonemes?

15. (a) Explain spectrographic analysis of voice.

Or

- (b) Explain likelihood ratio with examples.

Part C

(3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain with diagrams the working of LCR circuits.

Or

- (b) What are audio filters? Write a detailed note. Also explain A to D converters.

17. (a) Explain the video production technology in steps.

Or

- (b) Explain in detail the forensic examination of a video file for identifying its genuinity.

18. (a) How to identify a disguised voice from the original voice? Explain the basic principle of automatic audio detection.

Or

- (b) Explain:
(i) Long term averaging
(ii) Neural Network
