

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 39—FORENSIC-BOTANY, WILDLIFE AND MICROBIAL FORENSIC

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Discuss the various types of diatoms and their forensic importance.
- 2 Discuss the various characteristics that help identify wood.
- 3 Discuss the methods of forensic examination of various plant foods to rule out toxic adulterants.
- 4 Discuss the importance and role of sanctuaries in protecting endangered flora and fauna.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Role of wildlife forensics in *poaching* scenes.
- 6 Describe the identification features of the four major venomous snakes in Kerala.
- 7 Describe any one of the analytical testing methods for pesticides.
- 8 Describe the powers and functions of the Pollution Control Board.
- 9 Describe the analytical method used to analyse adulteration in petrol.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

10. Wildlife crimes.
11. Forest conservation Act.
12. Environment protection Act.
13. Polycyclic aromatic hydrocarbons.
14. Bio-medical waste management rules.
15. AFLP.
16. Biological weapons.
17. Importance of proteomics in bio-forensics.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 38—FORENSIC ANTHROPOLOGY, ENTOMOLOGY AND ODONTOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Discuss the role of forensic anthropology in a mass disaster situation.
- 2 Discuss how the chronological age of an individual is determined using a skeletal age assessment.
- 3 Discuss the sex differences in the human skull.
- 4 Discuss how the stature of the deceased is reconstructed using fragmentary bones.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 What are the insects of forensic importance in Kerala ?
- 6 Facial reconstruction.
- 7 Determination of the post mortem interval using forensic entomology.
- 8 Bite mark analysis.
- 9 Superimposition tests.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Forensic uses of ante-mortem dental records in victim identification.
- 11 Entomo-toxicology.
- 12 Life cycle of the blue bottle blow fly.
- 13 Racial differences in the human skull.
- 14 Determination of identity from recovered bones.
- 15 DNA isolation from human bones.
- 16 Role of aquatic fauna in forensic investigations.
- 17 Importance of the Human ear in biometric identification.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 37—PHARMACOLOGY AND FORENSIC ANALYSIS OF DRUGS

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Discuss the abuse and addiction potential of Benzodiazepines.
- 2 Discuss the role of performance enhancement drugs in sports and their detection.
- 3 What is a “date rape drug” ? Discuss the pharmacological effects of GHB.
- 4 Discuss the common adulterants used in opioid drugs and the determination of purity of a seized sample.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Discuss the limitations of analysis of drugs.
- 6 Analysis of drug precursors.
- 7 Discuss the analysis of drugs in biological samples and their importance.
- 8 Methods of extraction of drugs from blood and viscera samples.
- 9 Discuss the methods used for quantification of drugs in a sample.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Heroin.
- 11 Methamphetamine.
- 12 Hashish.
- 13 Cocaine.
- 14 Solvent abuse.
- 15 TLC
- 16 Designer drugs.
- 17 LSD.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 36—EXPLOSIVES AND EXPLOSION

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Define and explain the terms explosion, detonation and deflagration.
- 2 Describe and explain the differences between a 'low explosive' and a "high explosive".
- 3 Explain how explosions are classified.
- 4 What is a "blast wave" ? Discuss its effects on structures and humans.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Discuss the uses of commercial explosives ?
- 6 What are military explosives and what are their characteristics ?
- 7 Discuss how an IED is made and their common uses by "non-state actors".
- 8 Discuss and describe the role of a "bomb squad" in disposing of a "bomb".
- 9 Discuss the role of a forensic scientist in a post blast investigation.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Crude bombs.
- 11 Black powder.
- 12 Dynamite.
- 13 Detonator.
- 14 ANFO.
- 15 Polymer bonded explosives
- 16 Use of FTIR in detecting explosion residues.
- 17 Homemade bombs.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 35—ADVANCED FORENSIC BALLISTICS

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Describe and explain how the time elapsed since firing is ascertained.
- 2 Describe the theory behind restoration of erased numbers.
- 3 Ballistics data measurement system.
- 4 Scientific method of shooting reconstruction.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Barrel wash testing.
- 6 Fired cartridge case analysis.
- 7 Describe the various methods used for marking of firearms by the manufacturers.
- 8 Briefly describe the chemical methods used for identifying the shooter.
- 9 Describe and explain the various simple mathematics involved in shooting reconstructions.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Ultrasonic cavitation.
- 11 Ferrozine test.
- 12 Residues inside the barrel with smokeless gunpowder.
- 13 Ricochet marks.
- 14 Bullet entry wound.
- 15 Kronlein shot.
- 16 Cartridge case ejection pattern.
- 17 Laser etching.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 34—FORENSIC AUDIO AND VIDEO ANALYSIS

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Describe the mechanism of speech production.
- 2 Describe and explain the analysis of the linguistic and phonetic characteristics in forensic speaker recognition.
- 3 Describe the procedure of auditory examination of recorded audio by critical listening.
- 4 Describe and explain the procedure of linear and non-linear editing of video footage.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Describe and explain the method of retina scanning in authentication using biometrics.
- 6 Describe the concept of digital watermarking for forensic detection of counterfeit CDs of movies.
- 7 Describe the concept of test and error in speaker identification.
- 8 Explain the alcohol-speech relationship and explain its forensic importance.
- 9 Waveform analysis of recorded audio.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Uniqueness of a person's voice.
- 11 Automated speaker identification and verification system.
- 12 Speech spectrographic analysis.
- 13 Image enhancement.
- 14 Geometric morphometrics.
- 15 Difference between place and manner of articulation.
- 16 Hand vascular pattern biometrics.
- 17 Digital video recording formats.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021**

(CCSS)

M.Sc. Forensic Science

FSC 4E 33—FORGERY AND ITS FORENSIC DETECTION

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Write an essay on any *two* of the following :

- 1 Describe and explain the various issues in automated face detection when a person is using a disguise.
- 2 Describe the characteristics of genuine and forged signatures.
- 3 What is meant by the term “anachronistic features” and explain their importance in limiting the age of documents ?
- 4 Describe and explain the procedure for determining the genuineness of currency notes.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following :

- 5 Detection and decipherment of erasures and additions in documents.
- 6 Describe the various factors responsible for variations in signatures.
- 7 Holographic marks and their examination.
- 8 Use of desktop printers and image processing devices in forged Certificate Preparation.
- 9 Passport forgery and their detection.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following :

- 10 Main security features of the currency notes of India.
- 11 Automated signature verification system.
- 12 Detection of forged driving licence.
- 13 Differences between genuine tremor and tremors of fraud in handwriting examination.
- 14 Indicators of illiteracy in handwriting examination.
- 15 Determination of overwriting.
- 16 Examination of carbon copies.
- 17 Optical variable inks.

(5 × 4 = 20 marks)

**FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021****(CCSS)****M.Sc. Forensic Science****FSC 4E 32—ADVANCED FINGERPRINT DEVELOPMENT METHODS****(2019 Admissions)****Time : Three Hours****Maximum : 80 Marks****I. Write an essay on any *two* of the following :**

- 1 Describe and explain the method of lifting fingerprints using the adhesive tape method. Add a note on how to process the adhesive and non adhesive sides of the tape.
- 2 Briefly describe the chemistry and reaction mechanism of ninhydrin and its forensic application in fingerprint development.
- 3 Describe the procedure of Iodine fuming and fixation in development of fingerprints. Add a note on the operational use of the vapor method.
- 4 Describe and explain the use of nanoparticles in fingerprinting.

**(2 × 15 = 30 marks)****II. Write short essays on any *three* of the following :**

- 5 History of the Automated Fingerprint Identification System (AFIS).
- 6 Describe the traditional powder method in developing a latent fingerprint..
- 7 Describe the vacuum metal deposition technique of developing latent fingerprints.
- 8 Explain the limitations of Direct lifting methods in fingerprint development.
- 9 Describe and explain the various factors which complicate the interpretation of fingerprint comparisons.

**(3 × 10 = 30 marks)****III. Write short notes on any *five* of the following :**

- 10 Henry classification system of fingerprints.
- 11 Types of AFIS search.



- 12 Use of Oil Red O in developing latent fingerprints.
- 13 Physical methods of fingerprint enhancement.
- 14 Luminescent powder.
- 15 Electrochemical method of fingerprint development.
- 16 Chemical composition of fingerprint powder.
- 17 Development of latent fingerprint on human skin.

(5 × 4 = 20 marks)

CHMK LIBRARY UNIVERSITY OF CALICUT