C 21064 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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 dynamics of disease transmission and the method to be adopted for an outbreak investigation.

2 Discuss the procedure for toxin analysis using mass spectroscopy.

3 Discuss the methods of forensic examination of various plant foods to rule out toxic adulterants.

4 What are wildlife artifacts ? Discuss how they are documented and analysed in a case of alleged poaching.

(2 × 15 = 30 marks)

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

5 How is biosurveillance conducted ?

6 Describe the identification features of the four major venomous snakes in Kerala ?

7 Describe any *one* of the analytical testing methods for lead.

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 Forensic aspects of biological toxins.

11 Urobilinogen test.

12 Oil spill analysis protocol.

Turn over

13 Polycyclic aromatic hydrocarbons..

14 Bio-medical waste management rules.

15 Trade in wild animals

16 Deliberate introduction of a biological agent.

17 Importance of proteomics in bio-forensics.

(5 × 4 = 20 marks)

C 21063

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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 paleo-anthropology in archeology.

2 Discuss how somatoscopic observations help in identification.

3 Discuss the role of forensic taphonomy in assessing the post-mortem interval.

4 Discuss how the concept of "DNA kinship" helps in identification.

(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 Genetic traits which are of forensic importance.

7 Stature determination using long bones.

8 Bite mark analysis.

9 Sex differences in the human pelvic bones.

(3 × 10 = 30 marks)

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

10 Facial reconstruction.

11 Entomo-toxicology.

12 Factors that influence insect succession on the putrefying human body.

13 Racial differences in the human skull.

14 Determination of identity from recovered bones.

15 DNA isolation from human teeth.

16 Role of aquatic fauna in forensic investigations.

17 Importance of the Human ear in biometric identification.

(5 × 4 = 20 marks)

C 21062 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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 Cocaine.

2 Discuss the role of performance enhancement drugs in sports and their detection.

3 Discuss the sites of absorption of ethanol in the human body. How is it eliminated from the body ?

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 What are hallucinogenic drugs ? Discuss their prevalence in Kerala.

6 NDPS Act.

7 Discuss the analysis of drugs using HPLC.

8 Methods of extraction of drugs from blood and viscera samples.

9 Drug toxicity and death.

(3 × 10 = 30 marks)

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

10 Date rape drugs.

11 Micro crystal test.

12 Anabolic-Androgenic Steroids (AAS).

13 Cerebral Depressants.

14 Methaqualone.

15 Khat.

16 Designer drugs.

17 Clinical effects of opium on the human body.

(5 × 4 = 20 marks)

C 21061 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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. Each question carries 15 marks :

1 Describe how an explosion site is scientifically evaluated.

2 Describe and explain the various equipment used for detection of explosives and explosive devices.

3 Explain the role of "ICP-MS" in analysis of explosive residues.

4 Discuss the methods of extraction of explosive residues from post blast debris.

(2 × 15 = 30 marks)

II. Write short essays on any *three* of the following. Each question carries 10 marks :

5 Discuss the "reconstruction" of the sequence of events post an explosion.

6 Explain how bombs are disposed of by the Police.

7 Discuss the methods of "sample collection" from the site of an explosion. Add a note on the precautions to be taken.

8 Discuss and describe the "effects of an explosion" which are used to evaluate an explosion incident.

9 Discuss the general methods of manufacture of explosives.

(3 × 10 = 30 marks)

III. Write short notes on any *five* of the following. Each question carries 4 marks :

10 Colour tests for explosive residues.

11 Nitro-cellulose.

12 Slurry explosives.

13 Detonator.

14 PETN.

15 Polymer bonded explosives.

16 Use of FTIR in detecting explosion residues.

17 RDX.

(5 × 4 = 20 marks)

C 21060 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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 any *one* instrumentation technique used to analyse gunshot residue recovered from the hands of the shooter.

2 Describe the various methods used to remove serial numbers.

3 Correlating the range of fire assessment using the appearance of the entry wound of a smooth-bore firearm.

4 Discuss the role of scene evaluation in a shooting reconstruction.

(2 × 15 = 30 marks)

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

5 Discuss how the time elapsed since firing is assessed ?

6 Fired cartridge case analysis.

7 Chemical methods of restoration of erased serial numbers.

8 Discuss the use of blood spatter analysis in a shooting incident analysis.

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)

C 21059

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

Forensic Science

FSC 4E 34—FORENSIC AUDIO VIDEO ANALYSIS

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

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

1 Describe the acoustic properties of the vocal tract.

2 Describe and explain the analysis of the linguistic and phonetic characteristics in forensic speaker recognition.

3 Describe the variable factors which affect voice identification.

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 iris scanning in authentication using biometrics.

6 Describe the concept of digital watermarking of video footage.

7 Describe the concept of test and error in speaker identification.

8 Application of pattern recognition in speaker identification

9 Spectrographic analysis of recorded audio.

(3 × 10 = 30 marks)

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

10 Gait pattern analysis.

11 Automated speaker identification and verification system.

12 Speech spectrographic analysis.

13 3D face recognition.

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)

C 21058 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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 method of examination of a counterfeit banknote.

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 of examination of scanned documents.

(2 × 15 = 30 marks)

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

5 Forensic accounting and auditing in detection of corporate frauds.

6 Describe the various factors responsible for variations in signatures.

7 Describe how the age of a document is determined.

8 Use of desktop printers and image processing devices in forged Certificate Preparation.

9 Revenue stamp forgery and their detection.

(3 × 10 = 30 marks)

C 21057 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

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. Each question carries 15 marks :

1 Describe and explain the Physical methods of fingerprint enhancement.

2 Describe the method of latent fingerprint development on metallic surfaces.

3 Describe the procedure of Cyanoacrylate 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. Each question carries 10 marks :

5 Automated Fingerprint Identification System (AFIS).

6 Describe the magnetic 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. Each question carries 4 marks :

10 American classification system of fingerprints.

11 Types of AFIS search.

12 Use of Oil Red O in developing latent fingerprints.

13 Use of Sudan Black in fingerprint development.

14 Luminescent powder.

15 Electrochemical method of fingerprint development.

16 Chemical composition of fingerprint powder.

17 Development of latent fingerprints on human skin.

(5 × 4 = 20 marks)

C 2700-K

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Forensic Science

FSC 4E 41—DIGITAL IMAGE PROCESSING

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

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

1 Discuss what is meant by a digital image compression. What are the compression standards ? Differentiate between an error free compression and a lossy compression.

2 What is meant by pattern recognition ? What are its forensic applications ?

3 Discuss what is meant by steganography. How is it different from watermarking ?

4 Discuss the robust watermarking approaches. Mention their advantages and limitations too.

(2 × 15 = 30 marks)

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

5 Discuss the communication based models of watermarking.

6 Machine learning.

7 Artificial intelligence.

8 Hit or miss transformation.

9 Support vector machine.

(3 × 10 = 30 marks)

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

10 Steganalysis.

11 Geometric model's of watermarking.

12 Hidden markov models.

13 Probabilistic neural networks.

14 Perceptron.

15 Gray-scale images.

16 Image enhancement in the frequency domain.

17 Redundancies in image compression.

(5 × 4 = 20 marks)

C 2700-J

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Forensic Science

FSC 4E 40—ETHICAL HACKING AND RECOVERY FORENSIC

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

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

1 Discuss the methods / routes by which a computer network of an organization gets vulnerable to hacking / hostile attacks..

2 Discuss how the risk of a network being breached is analysed. Explain how the data is secured in the contingency of a cyber attack.

3 Discuss what is meant by web server hacking and explain how to prevent such an event.

4 Discuss the methods by which deleted data can be recovered.

(2 × 15 = 30 marks)

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

5 Discuss the various surveillance / snooping techniques and explain the countermeasures which can be employed to detect and prevent snooping.

6 How is data hidden ? Also discuss how hidden data can be discovered.

7 Discuss the concept of ethical hacking.

8 Describe how data can be recovered from a corrupted hard drive..

9 What is meant by SQL injection and prevention.

(3 × 10 = 30 marks)

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

10 Hostile Code.

11 Disk imaging.

12 Session hijacking.

13 Authentication and authorization.

14 Worms.

15 Honey trap forensics.

16 Disk cloning.

17 Recovering digital evidence using winhex.

(5 × 4 = 20 marks)