

Enrollment No.....



Faculty of Science
End Sem Examination Dec-2023
FS3CO19 Forensic Dermatoglyphics

Programme: B.Sc. (Hons.)

Branch/Specialisation: Forensic
Science**Duration: 3 Hrs.****Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. What are the specific points of analysis in fingerprint identification that include ridge endings and bifurcations? **1**
 (a) Loops and Whorl (b) Core and Delta
 (c) Minutiae (d) Furrows and Ridges
- ii. What is the primary function of a fingerprint bureau in forensic investigations? **1**
 (a) Collecting evidence from crime scenes
 (b) Analyzing DNA samples
 (c) Maintaining and analyzing fingerprint records
 (d) Conducting polygraph tests
- iii. What type of fingerprint pattern consists of concentric circles and spiral patterns? **1**
 (a) Loop (b) Arch (c) Composite (d) Whorl
- iv. What does edgeoscopy focus on in fingerprint analysis? **1**
 (a) Ridge flow patterns
 (b) Patterns around the edges of the fingerprint
 (c) Minutiae points
 (d) Sweat gland distribution
- v. Which of the following represents a secondary classification in Henry's system? **1**
 (a) Loop (b) Delta (c) Arch (d) Core
- vi. In the Battley system of fingerprint classification, how are whorls categorized? **1**
 (a) By the number of ridge counts
 (b) By the presence of core and delta points
 (c) By the overall pattern flow
 (d) By the location of sweat pores

		[2]	
vii.	How does cyanoacrylate (superglue) fuming work to develop latent fingerprints?	1	
	(a) It reacts with amino acids to form a visible residue		
	(b) It binds with fatty acids in sweat, making prints visible		
	(c) It polymerizes with water and other compounds in the print, creating a white material		
	(d) It oxidizes the surface, revealing latent prints		
viii.	How does digital imaging enhance the visualization of faint or distorted fingerprint patterns?	1	
	(a) By increasing the resolution and contrast		
	(b) By adding artificial colours to the image		
	(c) By altering the shape of ridges and valleys		
	(d) By enlarging the overall image size		
ix.	What is the term used to describe the study of lip prints?	1	
	(a) Cheiloscopy		(b) Labioscopy
	(c) Buccoscopy		(d) Gingivoscopy
x.	Which part of the lip is most commonly used for collecting lip prints for forensic analysis?	1	
	(a) Vermilion border		(b) Philtrum
	(c) Cupid's bow		(d) Lower lip
Q.2	i. Define forensic dermatoglyphics.	2	
	ii. Describe the basic principle of fingerprinting.	3	
	iii. Explain the contribution of different pioneers in the field of forensic dermatoglyphics.	5	
OR	iv. Explain the biological basis of fingerprints, emphasizing the role of genetics and foetal development.	5	
Q.3	i. Define ridge counting in fingerprint analysis. Why is ridge counting an important aspect of fingerprint identification?	2	
	ii. Explain in detail the various types of fingerprint patterns. Discuss the statistical prevalence of these patterns in the general population and their significance in forensic identification.	8	
OR	iii. Discuss the significance of poroscopy and edgeoscopy in fingerprint analysis. Explain the principles behind each technique, and provide examples of real-world applications where these methods proved valuable in forensic investigations	8	
Q.4	i. Explain the primary principles behind Henry's system of classification and its significance in organizing fingerprint records.	3	

		[3]	
	ii. Explain the Battley system of classification.	7	
OR	iii. Explain the role and impact of AFIS in revolutionizing law enforcement and forensic investigations. Discuss the underlying technology, advantages, and limitations of AFIS.	7	
Q.5	i. Explain the mechanisms of fingerprint detection using cyanoacrylate fuming and ninhydrin. Highlight their respective advantages and limitations.	4	
	ii. Discuss in detail the chemical reactions involved in the detection of fingerprints using silver nitrate highlighting its specificity and sensitivity.	6	
OR	iii. Explain the challenges faced in preserving developed fingerprints on porous surfaces. Discuss two preservation methods used to address these challenges.	6	
Q.6	Describe the unique features of any two of the following types of prints and their forensic significance in criminal investigations.		
	i. Palm Prints	5	
	ii. Lip Prints	5	
	iii. Ear Prints	5	
