Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Science

End Sem Examination Dec 2024

FS3CO20 Advancement in Forensic Science

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.

			Marks	BL	PO	CO	PSO
Q.1	i.	The term "pragmatics" in linguistics primarily studies: (a) Word formation (b) Social aspects of language use (c) Sentence structure (d) Sound patterns	**1**	1	1	1	3
	ii.	The study of language style and variation, especially in written texts, is known as: (a) Semantics (b) Phonology (c) Stylistics (d) Pragmatics	**1**	1	1	1	3
	iii.	Which of the following is the primary basis for brain fingerprinting? (a) Measurement of physiological responses (b) Detection of brain activity in response to specific stimuli (c) Analysis of verbal responses (d) Monitoring of heart rate	**1**	1	1	2	3
	iv.	Polygraph tests primarily rely on measurements of: (a) EEG signals (b) Physiological responses to stress (c) Genetic markers (d) Brain wave patterns	**1**	1	1	2	3

P.T.O.

v.	Which of the following methods is a 2-D approach in facial reconstruction? (a) CT scan reconstruction (b) Clay modelling (c) Photographic overlay (d) 3D printing	**1**	1	1	3	3
vi.	The method of photographic superimposition requires matching the skull with: (a) Photographs of relatives (b) Old dental records (c) Ante-mortem images of the individual (d) 3D models	**1**	1	1	3	3
vii.	Which bloodstain pattern is most likely to be observed when blood is projected from a moving weapon? (a) Impact spatter (b) Cast-off pattern (c) Transfer pattern (d) Expirated pattern	**1**	1	1	4	3
viii.	A drop of blood striking a smooth surface at a 90-degree angle will form a: (a) Circular stain (b) Elliptical stain (c) Smear stain (d) Wavy stain	**1**	2	1	4	3
ix.	What is a significant advantage of using carbon dot powders in fingerprint analysis? (a) Increased resistance to UV exposure (b) Enhanced fluorescence under UV light (c) Higher durability in humid environments (d) Faster degradation	**1**	1	1	5	3
x.	In forensic analysis, AI can help enhance surveillance footage by: (a) Decreasing image contrast (b) Enhancing image resolution and identifying objects (c) Converting images to grayscale (d) Removing audio data	**1**	1	1	5	3
Q.2 i.	Define frequency and wavelength.	**2**	1	1	1	3
ii.	What is the difference between language and speech?	**3**	2	1	1	3

	iii.	Describe the anatomy of vocal tract.	**5**	1	1	1	3
OR	iv.	Write a note on “Forensic Linguistics.”	**5**	2	4	1	3
Q.3	i.	What is DNA fingerprinting?	**2**	1	1	2	3
	ii.	Write a note on “Brain Fingerprinting.”	**8**	2	2	2	3
OR	iii.	Explain principle, instrumentation, and working of Lie-Detection technique.	**8**	1	3	2	3
Q.4	i.	Define facial reconstruction and explain its forensic applications.	**3**	1	1	3	3
	ii.	Describe the methods of facial reconstruction in detail.	**7**	1	2	3	3
OR	iii.	Explain various types of Superimposition Techniques.	**7**	1	1	3	3
Q.5	i.	How bloodstain pattern helps in crime scene reconstruction?	**4**	3	2	4	3
	ii.	Explain various types of bloodstain patterns.	**6**	1	1	4	3
OR	iii.	How to document bloodstain pattern evidence? Explain its forensic importance.	**6**	1	2	4	3
Q.6		Attempt any two:					
	i.	Write a note in “application of Artificial Intelligence in Forensic Investigation.”	**5**	2	7	5	3
	ii.	How 3D technology helps to determine physical fit?	**5**	2	2	5	3
	iii.	What are carbon dot powders in fingerprint analysis? Explain its significance.	**5**	1	2	5	3

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Marking Scheme
FS3CO20 (T) Advancement in Forensic Science (T)

Q.1	i)	B) Social aspects of language use	**1**
	ii)	C) Stylistics	**1**
	iii)	B) Detection of brain activity in response to specific stimuli	**1**
	iv)	B) Physiological responses to stress	**1**
	v)	C) Photographic overlay	**1**
	vi)	C) Ante-mortem images of the individual	**1**
	vii)	B) Cast-off pattern	**1**
	viii)	A) Circular stain	**1**
	ix)	B) Enhanced fluorescence under UV light	**1**
	x)	B) Enhancing image resolution and identifying objects	**1**
Q.2	i.	1 mark for each definition.	**2**
	ii.	1 mark for each difference (3 difference).	**3**
	iii.	Description: 3 marks, Diagram: 2 marks	**5**
OR	iv.	Definition: 1 mark, Description: 4 marks	**5**
Q.3	i.	Definition: 2 marks	**2**
	ii.	1 mark for each point.	**8**
OR	iii.	Principle: 2 marks, Instrumentation: 3 marks, Working: 3marks	**8**
Q.4	i.	Definition: 2 marks, Applications: 1 mark	**3**
	ii.	2D and 3D method: 3.5 marks each	**7**
OR	iii.	Definition: 1 mark, 3 types: 2 marks each	**7**
Q.5	i.	Significance: 1 mark each (4 Points)	**4**
	ii.	1 mark each for blood stain pattern	**6**
OR	iii.	Documentation process: 5 marks, Importance: 1 mark	**6**
Q.6	i.	1 mark each for 5 application point.	**5**
	ii.	3d technology: 2 marks, applications: 3 marks	**5**
	iii.	Carbon dots: 2 marks, Fingerprint analysis: 2 marks, Significance: 1 mark.	**5**

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