

Q.5	i.	Explain the significance of control and standard samples in evidence preservation	4	03	03	04	02
	ii.	Describe the steps for collecting and preserving blood samples at a crime scene.	6	03	03	04	03
OR	iii.	Compare the techniques for collecting biological vs. chemical evidence.	6	04	03	04	02
Q.6		Attempt any two:					
	i.	Design a reconstruction plan for a crime scene involving glass fracture patterns and bloodstains.	5	03	03	05	02
	ii.	Analyze the role of tire and skid mark patterns in vehicular crime scene reconstructions.	5	04	03	05	03
	iii.	Describe the principles for reconstruction.	5	03	03	05	02

*Total No. of Questions: 6**Total No. of Printed Pages: 4***Enrollment No.....****Faculty of Science****End Sem Examination Dec 2024****FS3EL03 Criminalistics**

Programme: B.Sc.

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
1	03	03	01	02

Q.1 i. A criminalist arrives at a crime scene and observes signs of tampering. Which initial steps should they take to protect the crime scene-

- (a) Call for backup
- (b) Document initial observations without altering the scene
- (c) Seal the area and prevent unauthorized access
- (d) All of these

ii. Evaluate the following scenarios and select the most effective search method for a large, open field crime scene-

- | | |
|-----------------|-------------------|
| (a) Line search | (b) Spiral search |
| (c) Grid search | (d) Zone search |

iii. In a situation where first responders find evidence spread across multiple rooms, what is the recommended sequence for documenting-

- (a) Take photographs before sketching the layout
- (b) Sketch first, then record notes
- (c) Videotape first and then takes photos
- (d) Collect evidence immediately to prevent contamination

1	05	03	01	02
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1	04	03	02	02
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iv. An investigator must document an outdoor scene during adverse weather. which documentation technique would be most reliable under these conditions-	1	03 03 02 02	ix. Given several theories of reconstruction, which approach best validates the sequence of events in a staged crime scene-	1	03 03 04 02
(a) Photography with water-resistant equipment (b) Sketching with detailed measurements (c) Videography from various angles (d) Immediate evidence collection			(a) Pattern evidence correlation (b) Witness statements alone (c) Physical evidence proximity (d) All available data integration		
v. Which one has the highest probative value in linking a suspect to a murder case?	1	04 04 02 02	x. To reconstruct a crime scene effectively, what should be considered when analysing glass fracture patterns-	1	06 03 05 02
(a) Blood evidence with DNA match (b) Fingerprint with partial smudge (c) Fiber on the victim's clothing (d) Soil sample from suspect's shoe			(a) Direction of impact (b) Type of glass used (c) Force exerted (d) All of the above		
vi. Evaluate the potential outcomes of mishandling evidence at a crime scene. What is the likely legal impact?	1	05 03 03 02	Q.2 i. Define criminalist.	2	02 03 01 02
(a) Evidence may be excluded in court (b) Case may be dismissed (c) Investigator may face legal consequences (d) All of these			ii. Describe the importance of crime scene protection.	3	03 03 01 02
vii. Evaluate the following steps. Which is most crucial to maintaining the integrity of the evidence during transport-	1	05 02 03 02	iii. Analyze the impact of legal considerations in crime scene investigation.	5	03 03 01 02
(a) Controlled temperature during transport (b) Immediate documentation (c) Proper sealing and labelling (d) Minimizing handling			OR iv. Create a plan to ensure safety measures at a crime scene involving hazardous materials.	5	06 03 01 02
viii. When collecting a blood sample at a crime scene, which preservation technique should be applied-	1	03 03 03 02	Q.3 i. Explain the importance of crime scene logs and recording notes.	2	04 03 02 02
(a) Store in airtight plastic (b) Use a paper container (c) Label and refrigerate immediately (d) Freeze sample after sealing			ii. Apply the 5Ws and 1H (who, what, when, where, why, and how) to a hypothetical crime scene.	8	03 02 02 02
			OR iii. Evaluate the effectiveness of coordination between police and forensic scientists during a crime scene investigation.	8	05 03 02 02
			Q.4 i. List and describe types of evidence that might be found in an assault case.	3	02 03 03 02
			ii. Analyze the evidence collection process for murder and poisoning cases.	7	04 03 03 02
			OR iii. Discuss evidence handling protocol for a complex crime scene involving fire and arson.	7	03 04 03 03

Marking Scheme

FS3EL03 (T) Criminalistics (T)

Q.1	i) (d) All of the above ii) (a) Spiral Method iii) (a) Take photographs before sketching the layout iv) (a) Photography with water-resistant equipment v) (a) Blood evidence with DNA match vi) (d) All of the above vii) (c) Proper sealing and labelling viii) (c) Label & refrigerate immediately ix) (d) All available data integration x) (d) All of the above	1 1 1 1 1 1 1 1 1 1		Conclusion on the overall impact of coordination- 2 marks	
Q.2	i. Define criminalist- Clear and concise definition- 1 mark Mention of their role or area of expertise 1 mark	2	Q.4	i. List and describe types of evidence that might be found in an assault case- Listing types of evidence (e.g., physical, biological, trace)- 1 mark Brief descriptions of each type- 2 mark	3
	ii. Describe the importance of crime scene protection- Mentioning why crime scene protection is necessary (preservation of evidence)- 1 mark Explanation of potential consequences of failing to protect the crime scene (evidence contamination, legal challenges)- 1 mark Examples or specific measures for protection-1 mark	3	ii.	Analyze the evidence collection process for murder and poisoning cases- Overview of general collection procedures- 2 marks Specific protocols for murder cases (e.g., handling blood evidence, securing the scene)- 3 marks Specific protocols for poisoning (e.g., collecting bodily fluids, identifying chemical substances)- 2 marks	7
OR	iii. The impact of legal considerations in crime scene investigation- Five Point with Description- 1 Marks each	5	iii.	Discuss evidence handling protocol for a complex crime scene involving fire and arson- Explanation of fire and arson investigation principles-2 marks Detailed handling procedures for evidence (e.g., protecting partially burned items, chemical residue analysis)- 3 marks Special considerations for preserving fragile or perishable evidence-2 marks	7
OR	iv. A plan to ensure safety measures at a crime scene involving hazardous materials- Five Point with Description- 1 Marks each	5	Q.5	i. Accurate definition of control and standard samples-1 mark Stating their primary purpose in evidence comparison and validation-1 mark Clear example or illustration of their use in forensic processes-1 mark	4
Q.3	i. Importance of crime scene logs- 1 Marks Importance of recording notes- 1 Marks	2	ii.	Insight into the broader significance, like maintaining the chain of custody, supporting scientific rigor, and the impact on legal admissibility- 1 mark	6
	ii. Apply the 5Ws and 1H (who, what, when, where, why, and how) to a hypothetical crime scene- Explanation of each of the 5Ws and 1H- 2 marks Application to a detailed hypothetical scenario (e.g., describing a crime scene)- 3 marks Clear and logical integration of all elements into the scenario-3 marks	8	i.	Describe the steps for collecting and preserving blood samples at a crime scene- Explanation of initial steps (e.g., documentation, safety measures)- 2 marks Proper collection methods (e.g., swabbing, scraping)- 2 marks Preservation and transport (e.g., refrigeration, use of specific containers)- 2 marks	
OR	iii. Evaluate the effectiveness of coordination between police and forensic scientists during a crime scene investigation-	8			

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OR	iii.	Compare the techniques for collecting biological vs. chemical evidence- 6
		Description of techniques for biological evidence (e.g., DNA swabs, blood collection)- 2 marks
		Description of techniques for chemical evidence (e.g., residue collection, air sampling)- 2 marks
		Comparative analysis highlighting differences and challenges-2 marks
Q.6		Attempt any two:
	i.	Design a reconstruction plan for a crime scene involving glass fracture patterns and bloodstains- 5
		Identification of necessary reconstruction elements (e.g., trajectory, pattern analysis)- 2 marks
		Step-by-step procedure of analysis-2 marks
		Integration of findings to create a logical scene reconstruction-1 mark
	ii.	Analyze the role of tire and skid mark patterns in vehicular crime scene reconstructions- 5
		Explanation of tire and skid mark analysis- 2 marks
		Description of how they contribute to understanding vehicle movement and accident cause-2 mark
		Example or case study illustrating effectiveness- 1 mark
	iii.	Describe the principles of pattern evidence in reconstruction- 5
		Definition and overview of pattern evidence-2 mark
		Explanation of different types of patterns (e.g., bloodstains, footprints)- 2 marks
		Application of these principles in reconstructing events-1 mark
