

Reg.No.: 

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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 9029**

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE / JULY 2024

Second Semester

Biotechnology

P23BTE25 – FORENSIC BIOTECHNOLOGY

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

|                          |                    |                |                 |
|--------------------------|--------------------|----------------|-----------------|
| Knowledge Levels<br>(KL) | K1 – Remembering   | K3 – Applying  | K5 - Evaluating |
|                          | K2 – Understanding | K4 – Analyzing | K6 - Creating   |

**PART – A**

(10 x 2 = 20 Marks)

| Q.No. | Questions   | Marks | KL | CO  |
|-------|---|-------|----|-----|
| 1.    | List the type of evidence collected in crime investigation.                           | 2     | K2 | CO1 |
| 2.    | Name any four pieces of biological evidence to be collected in a crime investigation. | 2     | K1 | CO1 |
| 3.    | List any two fluorescent dyes used to stain the DNA.                                  | 2     | K2 | CO2 |
| 4.    | State the principle of DNA isolation from a tissue sample.                            | 2     | K1 | CO2 |
| 5.    | What are the commonly used serological assays in forensic analysis?                   | 2     | K2 | CO3 |
| 6.    | Explain the analytical assay used for the identification of saliva.                   | 2     | K1 | CO3 |
| 7.    | Outline the procedure to collect finger prints at a crime scene.                      | 2     | K2 | CO4 |
| 8.    | Recall the type of fibers to be collected from the crime scene.                       | 2     | K2 | CO4 |
| 9.    | List any two techniques used in the analysis of poisons/ toxins.                      | 2     | K1 | CO5 |
| 10.   | Define the term Forensic Anthropology.  | 2     | K2 | CO5 |

**PART – B**

(5 x 13 = 65 Marks)

| Q.No.  | Questions  | Marks | KL | CO  |
|--------|--|-------|----|-----|
| 11. a) | Write a detailed notes on collecting non-biological evidence at the crime scene. | 13    | K3 | CO1 |

|     |    |  |    |    |     |
|-----|----|--|----|----|-----|
|     |    | (OR)   |    |    |     |
|     | b) | Describe the procedures for packing and transporting evidence collected at the crime scene.                      | 13 | K2 | CO1 |
| 12. | a) | Write a note on RNA isolation and real-time PCR uses in forensic biotechnology.                                  | 13 | K2 | CO2 |
|     |    | (OR)   |    |    |     |
|     | b) | What is DNA fingerprinting? How it is useful in forensic biotechnology. Explain with a case study.               | 13 | K4 | CO2 |
| 13. | a) | Heredity and paternity establishment are integral to forensic science- Explain this statement with a case study. | 13 | K4 | CO3 |
|     |    | (OR)   |    |    |     |
|     | b) | Describe the detailed protocols for collecting, packaging, and preserving rape case evidence.                    | 13 | K1 | CO3 |
| 14. | a) | i. How will you examine the Fibers collected as evidence?  | 5  | K1 | CO4 |
|     |    | ii. Discuss how the fibers collected from the crime scene be useful in the forensic examination?                 | 8  | K3 | CO4 |
|     |    | (OR)   |    |    |     |
|     | b) | Write a detailed note on the discovery and development of fingerprints.  | 13 | K2 | CO4 |
| 15. | a) | Write about the collection and preserving toxicological evidence from a crime scene.                             | 13 | K1 | CO5 |
|     |    | (OR)   |    |    |     |
|     | b) | i. Explain the techniques used in forensic pathology.  | 5  | K2 | CO5 |
|     |    | ii. How forensic pathology will be useful in identifying a drug overdose case. Justify.                          | 8  | K5 | CO5 |

### PART – C

|       |    |   |       |                     |                   |  |
|-------|----|---|-------|---------------------|-------------------|--|
|       |    |   |       | (1 x 15 = 15 Marks) |                   |  |
| Q.No. |    | Questions   | Marks | KL                  | CO                |  |
| 16.   | a) | A victim died 6 hours back, maybe due to intentional poisoning. Explain how you will collect evidence, transport them, and perform forensic assays to establish the cause of death.               | 15    | K6                  | CO3<br>CO4<br>CO5 |  |
|       |    | (OR)  |       |                     |                   |  |
|       | b) | A murdered victim was suspected to have died from gunshot wound in the chest. Explain how you will collect evidence, transport them, and perform forensic assays to establish the cause of death. | 15    | K6                  | CO1<br>CO2<br>CO3 |  |