

**Ques.1 Answer the following questions:**

- i. Describe the structure and functions of an animal cell. Explain the forensic relevance of different cell organelles, such as the nucleus and mitochondria. 7Marks
- ii. Describe the structure and function of the nephron. Explain the processes of filtration, reabsorption, secretion, and urine formation in the excretory system. 7Marks

**OR**

- i. Discuss the components and functions of the lymphatic system. Explain how lymph is formed, transported, and its role in body defence. 7Marks
- ii. Explain the scope and applications of forensic biology. Discuss its various branches and the role in modern forensic investigations. 7Marks

**Ques.2 Answer the following questions:**

- i. Describe the microscopic examination methods used for distinguishing between human and animal hair. What features are considered for forensic comparison? 7Marks
- ii. Explain the forensic examination of seminal stains — collection, identification, and confirmatory tests. 7Marks

**OR**

- i. How can race and body site of origin be determined from hair? Discuss its forensic application 7Marks
- ii. Differentiate between natural and synthetic fibers. Explain the methods used for the identification and comparison of fiber samples in forensic science. 7Marks

**Ques.3 Answer the following questions:**

- i. Write a short note on the isolation of DNA. 7Marks
- ii. Explain various enzyme assay techniques 7Marks

**OR**

- i. Explain the restriction fragment length polymorphism technique. 7Marks
- ii. Write a short note on Radio Immune Assay (RIA). 7Marks

**Ques.4 Answer the following questions:**

- i. Explain in detail the methods used for the isolation and identification of diatoms from internal tissues. Discuss their forensic significance in drowning cases. 7Marks
- ii. Explain the Wildlife (Protection) Act, 1972, and its relevance to wildlife forensic science. 7Marks

**OR**

- i. Include its role in estimating the time of death, detecting cases of neglect or abuse, determining the movement of corpses, and analyzing toxicological substances.? 7Marks
- ii. What types of physical evidence are encountered in wildlife crimes? Explain their examination methods. 7Marks

**Ques.5 Attempt any seven out of twelve.**

14Marks

1. What are the main layers of the heart wall?
2. Differentiate between mechanical and chemical digestion.
3. Define forensic serology.
4. What is the forensic significance of the medullary index?
5. Name any two techniques for differentiating man-made fibers.
6. List any four biological fluids commonly examined in forensic biology.
7. Mention two applications of fluorescence immunoassay.
8. Define DNA polymorphism.
9. State the difference between exons and introns.
10. Write the scientific name of the common bluebottle fly.
11. What is the Wildlife (Protection) Act, 1972?
12. What is a tracheid?

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