

Enrollment No.....



Faculty of Science
End Sem Examination May-2024
FS3CO21 Forensic Biology

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. Which statement is false? **1**
 (a) Diatoms are unicellular microscopic algae.
 (b) Diatoms belong to class Bacillariophyta.
 (c) Diatoms found in rivers, lakes, ponds and oceans
 (d) Diatoms can not serve as a determinant of submersion before or after death.
- ii. The study of tree rings is called- **1**
 (a) Tree phylogeny (b) Anthropology
 (c) Tricology (d) Dendrochonology
- iii. Statement 1: Each collected evidence should be packed separately. **1**
 Statement 2: Each evidence should keep properly with complete notes.
 (a) Both statements are false
 (b) Both Statements are true
 (c) Statement 1 is true; statement 2 is false
 (d) Statement 1 is false; statement 2 is true
- iv. Which test is used to determine the species identification? **1**
 (a) Luminol test (b) Keratin test
 (c) Precipitin test (d) Gluten test
- v. Species that are very likely to become extinct in the near future **1**
 called-
 (a) Endangered species (b) Threatened species
 (c) Extinct species (d) Other than this

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- vi. The ratio of the toe to pad size is larger in- **1**
 (a) Dog families (b) Cat families
 (c) Both (a) and (b) (d) None of these
- vii. Following all the applications of forensic entomology are true **1**
 except one:
 (a) Determination of PMI
 (b) Non detection of toxins or drugs by analysis of insect larvae
 (c) Movement of the corpse
 (d) Manner and cause of death
- viii. Which major variable affects the fly's life cycle? **1**
 (a) Pressure (b) Moisture (c) Barometer (d) Temperature
- ix. Bioterror agents classified into- **1**
 (a) Class A (b) Class B (c) Class C (d) All of these
- x. The scientific discipline dedicated to analyze microbial evidence **1**
 from a crime scene that can help in solving cases such as
 bioterrorism attack, outbreaks of food borne disease called-
 (a) Microbial forensics (b) Wildlife forensics
 (c) Digital forensics (d) Forensic pathology
- Q.2 i. How we can use diatoms in forensic investigation? **2**
 ii. What is the significance of Pollen grains in forensics? **3**
 iii. What is pollination? Explain its various types. **5**
- OR iv. Describe the Wood significance in forensic science with the help of **5**
 a case study.
- Q.3 i. Differentiate between human and animal hair. **2**
 ii. Explain the various preliminary and confirmatory examinations for **8**
 saliva detection.
- OR iii. Explain the collection, packaging and transportation of biological **8**
 evidence.
- Q.4 i. What are the different protected and endangered species of animals **3**
 in India?
- ii. Explain how the illegal trade wildlife items identified pertaining to **7**
 wildlife forensics.
- OR iii. Give the name of different assays/tests in species identification and **7**
 explain any one assay.

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- Q.5 i. Explain different forensically important insects. **4**
 ii. Write a note on collection and preservation of entomological **6**
 evidence during death investigation.
- OR iii. Explain how the biology of maggots and temperature factor used in **6**
 post-mortem interval estimation?
- Q.6 Attempt any two:
 i. Name different types of bacteria and viruses of forensic **5**
 importance.
- ii. Write a note on microbial profile as identification tool in **5**
 bioterrorism.
- iii. Explain a case study which shows the use of microorganisms in **5**
 bioterrorism.

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Q.1	i)	d)Diatoms can not serve as a determinant of submersion before or after death.	1
	ii)	a) Dendrochonology	1
	iii)	b)Both Statements are true	1
	iv)	a) Precipitin test	1
	v)	a) An endangered species	1
	vi)	a) dog families	1
	vii)	a) Non detection of toxins or drugs by analysis of insect larvae	1
	viii)	a) Temperature	1
	ix)	a) All of the above	1
	x)	a. Microbial Forensics	1
Q.2	i.	Diatoms use in drowning cases.helps to see submersion is before or after death. Or explained by an example	2
		2 Marks	
	ii.	Definition	3
		1 Mark	
		Significance	
		2 Marks	
	iii.	Definition	5
		2 Mark	
		Significance	
		3 Marks	
OR	iv.	Definition	2
		2 Mark	
		Significance	
		3 Marks	
Q.3	i.	Any four difference between animal and human hair. May be about medullary index, scale pattern, medulla pattern (0.5 Marks*4)	2
	ii.	Saliva detection by preliminary examinations:	8
		4 Marks	
		Visual examination	
		Microscopic examination	
		Amylase test	
		Starch iodine assay	
		Colorimetric assay	
		Confirmatory examinations:	
		4 Marks	

		Immunochromatographic test	
		Elisa test	
		RNA based test	
		(Explanation of any two tests from preliminary and confirmatory test)	
OR	iii.	Explanation important aspects of the collection, packaging and transportation of Biological evidence. (4 Mark*2)	
Q.4	i.	Name 3 animal species from protected category and 3 animal from endangered category (1 Mark*3)	7
	ii.	Various methods like morphological examination, microscopic examination ,molecular biology methods use like DNA based (COI,COII)	7
OR	iii.	Immunochromatographic assay Ring Assay Ouchterlony Assay Crossed-over Electrophoresis Explanation of any one assay using blood/saliva/semen.	7
Q.5	i.	Blow flies Flesh flies Phorid flies Hover flies Piophilid flies Stratiomyid flies Trichocerid flies Dermestid beetles Moths Mites Ants and wasps Spiders Name of 4-5 insects with Description (short) about blow/flesh flies and about other two insects	4
	ii.	Explanation about the collection and preservation of maggots for forensic analysis.	6
OR	iii.	Explanation about the PMI calculation using hypothetical example by stating how the effect of temperature affects PMI calculation.	6
Q.6		Forensic imp Bacteria Virus	1 Mark 2 Marks 2 Marks
			5

- i. Process or note on microbial profiling in bioterrorism (Techniques) **5**
- ii. Any case study in which microorganisms used as bio weapon .case **5**
study may be self explained or happened.
