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

Enrollment No.....

Faculty of Science

End Sem (Odd) Examination Dec-2022

FS3EL05 Forensic Genetics

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.

Q.1 i. Who is considered to be a father of DNA fingerprinting? **1**

(a) Waton & Crick (b) Misher

(c) Alec Jeffreys (d) Lal Ji Singh

ii. Chargaff Rule followed by which statement- **1**

(a) Amount of adenine (A) is equal to that of guanine (G) and the amount of thymine (T) is equal to that of cytosine (C)

(b) Amount of adenine (A) is equal to that of cytosine (C) and the amount of thymine (T) is equal to that of guanine (G)

(c) Amount of all bases are equal

(d) Amount of adenine (A) is equal to that of thymine (T) and the amount of guanine (G) is equal to that of cytosine (C)

iii. The genetic disorder can be identified at earlier phase using the technique known as- **1**

(a) Karyotyping process (b) Biochemical genetic

(c) Genomic testing (d) All of these

iv. The children who suffer from down syndrome having the defect on which pair of chromosomes- **1**

(a) 19 number pair (b) 20 number pair

(c) 21 number pair (d) 22 number pair

v. Which of the following statements is accurate for the PCR – polymerase chain reaction? **1**

(a) Automated PCR machines are called thermal cyclers

(b) A thermostable DNA polymerase is required

(c) Millions to billions of desired DNA copies can be produced from microgram quantities of DNA

(d) All of these

P.T.O.

vi. Name of the technique used for the detection of polymorphism in genetic characters- **1**
(a) RFLP (b) RAPD (c) VnTR (d) STR

vii. Which of the following characteristics of pea plants was not used by Mendel in his experiments? **1**
(a) Seed colour (b) Seed shape
(c) Pod length (d) Flower position

viii. A sampled "a" population has 36% of homozygous recessive genotype (aa). Then the frequency of allele "a" is- **1**
(a) 0% (b) 20% (c) 60% (d) 70%

ix. The Principle of RT-PCR is- **1**
(a) Transcription (b) Translation
(c) Reverse Transcriptase (d) None of these

x. The best genetic tool can use for animal species identification using the- **1**
(a) mtDNA (b) DNA
(c) Protein (d) None of these

Q.2 i. Define Chargaff's rule and their importance in genetics. **2**
ii. What are the three laws defined by the Mendel? **3**
iii. Write a brief note on recombinant DNA technology and its applications. **5**
OR iv. Draw the double helical model of DNA and label it. **5**

Q.3 i. Explain the four applications of mtDNA. **2**
ii. Describe the detail procedure of karyotyping and its importance. **8**
OR iii. Write a brief note on Chromosomal Mutation. **8**

Q.4 i. What do you mean by polymerase chain reaction and their application in forensic science? **3**
ii. Describe RFLP procedure in details. **7**
OR iii. Write a brief note on genetic disorder. **7**

Q.5 i. Explain Hardy-Weinberg law in details. **4**
ii. Proof the statement of DNA typing importance in identifying unrecognizable bodies **6**
OR iii. Write the importance of DNA testing in disputed paternity cases. **6**

Q.6 Write a short note on any two:
i. Southern blot analysis and its importance **5**
ii. Chemical structure of DNA **5**
iii. Importance of Wildlife Forensic **5**

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Scheme of Marking

	Faculty of Science End Sem (Odd) Examination Dec-2022 Forensic Genetics (FS3EL06)	
MEDI-CAPS UNIVERSITY Knowledge is Power	Programme: B.Sc.	Branch/Specialisation:

Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.

Q.1	i)	C	**1**
	ii)	D	**1**
	iii)	D	**1**
	iv)	C	**1**
	v)	D	**1**
	vi)	A	**1**
	vii)	C	**1**
	viii)	C	**1**
	ix)	C	**1**
	x)	A	**1**
Q.2	i.	Explanation of Chargaff's rule Genetics importance of Chargaff's rule	**1,1**
	ii.	Name of each law contains equal marks (1,1,1)	**1,1,1**
	iii.	Explanation of recombinant DNA technology and its applications.	**4,1**
OR	iv.	Structure of double helical model of DNA and its labelling	**4,1**
Q.3	i.	Each application contains 0.5 marks	**2**
	ii.	Procedure of Karyotyping Application of this procedure	**6,2**
OR	iii.	Explanation of Chromosomal Mutation Example of certain mutation	**5,3**
Q.4	i.	Introduction of PCR Application of PCR	**2,1**
	ii.	Explanation of RFLP procedure step by step	**7**
OR	iii.	Explanation of Genetic Disorder with examples	**5,2**
Q.5	i.	Hardy-Weinberg law explanation and application	**3,1**
	ii.	Explanation of DNA typing DNA typing importance for human remains/ unknown dead body identification	**3, 3**
OR	iii.	DNA testing DNA testing importance in disputed paternity testing	**2,4**
Q.6			
	i.	Southern blot analysis and its importance	**3,2**
	ii.	Chemical structure of DNA Structure labelling	**3,2**
	iii.	Wildlife Forensic Importance of Wildlife Forensic explanation	**2.5,** **2.5**

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