## UNIVERSITY OF JAFFNA

## BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES THIRD YEAR FIRST SEMESTER EXAMINATION – OCTOBER 2019 MLSBM 3131 BIOTECHNOLOGY AND MOLECULAR BIOLOGY 1

Date: 01.11.2019	Time: 1 Hour
ANSWER ALL FOUR QUESTIONS	1 mc. 1 110u1
1.	
1.1. What is meant by the term 'vector'? Give two (2) examples.	(20 Marks)
1.2. State four (4) essential properties of a cloning vector.	(20 Marks)
1.3. Define the term DNA fingerprinting.	(20 Marks)
1.4. Discuss the uses of DNA fingerprinting in forensic case work.	(40 Marks)
	(10 Marks)
2.	
2.1.Define 'Genetic Code'.	(10 Marks)
2.2.Briefly explain four (4) characteristics of a genetic code.	(40 Marks)
2.3. Hypothetical genome segment consists of a protein code with a Rho	o independent
terminator site is given below.	o maepenaem
Promoter	
region	Terminator
5' C GAGCCATGCATTATCTATGAGATAA	13311(14)
2.3.1. Identify the template strand and mention the reason.	(25 Maylan)
2.3.2. Assume that a G/C (Top/Bottom) base pair is inserted immediate	(35 Marks)
pair shown in Bold. Comment on the given situation.	(15 Marks)
3.	
3.1. State the importance of following enzymes in DNA replication.	
3.1.1. DNA Topoisomerase	****
3.1.2. DNA Polymerase	(10 Marks)
	(10 Marks)
3.2. Explain the post transcriptional modifications of eukaryotic mRNA. 3.3. State the differences between transcriptions.	(50 Marks)
3.3. State the differences between transcription and replication.	(30 Marks)

4.	
4.1. Describe the basic steps in Polymerase Chain Reaction.	(40 Marks)
4.2. State the importance of following components of a PCR master mix.	
4.2.1. Mg <sup>2+</sup>	(05 Marks)
4.2.2. Taq Polymerase	(05 Marks)
4.2.3. Buffer	(05 Marks)
4.2.4. dNTPs	(05 Marks)
4.3. Briefly describe the principle behind using DNA oligonucleotide fluorescent	
probes (Tag Man Probes) in aPCR.	(40 Marks)