

UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
FOURTH YEAR SECOND SEMESTER EXAMINATION- MARCH 2019

MLSBM 4233 BIOTECHNOLOGY AND MOLECULAR BIOLOGY II

Date: 13.03.2019

Time: 1 Hour

ANSWER ALL FOUR QUESTIONS.

1. A blood sample was obtained from a patient with Hepatitis B infection, to quantify the DNA in an advanced Molecular laboratory.
 - 1.1. Name a suitable PCR technique to identify the pathogen and give the principle of the technique. **(20 Marks)**
 - 1.2. Outline the different phases of the technique mentioned in question 1.1. **(40 Marks)**
 - 1.3. List five advantages and five disadvantages of the technique mentioned in question 1.1. **(40 Marks)**
2.
 - 2.1. What is meant by the term “gene therapy”. **(15 Marks)**
 - 2.2. Briefly describe the different methods involved in gene therapy. **(30 Marks)**
 - 2.3. Briefly explain the important characteristics of ideal vectors used in gene therapy. **(30 Marks)**
 - 2.4. Briefly explain how gene therapy is achieved in a patient with Adenosine deaminase (ADA) deficiency. **(25 Marks)**
3. Briefly describe the following
 - 3.1. Single gene disorders **(50 Marks)**
 - 3.2. Reciprocal translocation **(50 Marks)**
4. Write notes on
 - 4.1. Mosaicism **(25 Marks)**
 - 4.2. Applications of Agarose gel electrophoresis in DNA analysis **(25 Marks)**
 - 4.3. Uses of cell cultures **(50 Marks)**