UNIVERSITY OF JAFFNA, SRI LANKA
FACULTYOF ALLIED HEALTH SCIENCES
FOURTH YEAR FIRST SEMESTER EXAMINATION IN BPharmHons- 2022
PHAMB 4143-MOLECULAR BIOLOGY AND PHARMACEUTICAL BIOTECHNOLOGY

Date:19/03/2024 Time: 03 Hours

Answer All SIX Questions.
Answer Part A and Part B in separate answer books

PART A

1.

1.1 Explain the role of the followings in DNA replication.
- 1.1.1 Origin binding protein (15 Marks)
- 1.1.2 DNA Topoisomerase I and II (15 Marks)
- 1.1.3 DNA Polymerase (15 Marks)

1.2 List different types of RNA and their functions. (15 Marks)

1.3 Explain the process of transcription in eukaryotes. (40 Marks)

2.

2.1 Explain the working principle of
- 2.1.1 Fluorescence In Situ Hybridization (FISH) (20 Marks)
- 2.1.2 Quantitative reverse transcription PCR (RT-qPCR) (20 Marks)

2.2 Describe the steps of a conventional PCR. (40 Marks)

2.3 Tabulate the advantages and disadvantages of Two-step RT-qPCR. (20 Marks)

PART B

3.

3.1 List the different types of DNA sequencing methods. (10 Marks)

3.2 Explain the methods mentioned in 3.1. (30 Marks)

3.3 Briefly discuss on Southern blotting. (45 Marks)

3.4 List the application of northern blotting. (15 Marks)

4.

4.1 Define Pharmacogenetics. (10 Marks)

4.2 Briefly explain gene therapy techniques. (30 Marks)

4.3 Briefly discuss the challenges in gene therapy. (40 Marks)

4.4 List the methods used to introduce rDNA into host cells. (20 Marks)

5.

5.1 List the requirements of an inoculum used in fermentation. (20 Marks)

5.2 Briefly discuss the advantages and disadvantages of solid-state fermentation. (30 Marks)

5.3 Name two (02) fungus species used in the penicillin production by fermentation. (10 Marks)

5.4 Describe the downstream process of penicillin produced by fermentation. (30 Marks)

6.

6.1 6.1.1 State the steps involved in the laboratory monoclonal antibody production. (20 Marks)
6.1.2 Briefly explain the advantages and disadvantages of monoclonal antibodies. (40 Marks)

6.2 Write a short note on subunit vaccines. (40 Marks)