UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF PHARMACY
FOURTH YEAR FIRST SEMESTER EXAMINATION- 2019
PHABT 4144 PHARMACEUTICAL BIOTECHNOLOGY

Date: 22/02/2021 **Time: 02 Hours**

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

PART A

1. **1.1** Draw a flowchart representing all the components of a bacterial fermentation process. **(40 Marks)**
   1.2 Briefly describe the following steps in the penicillin production by fermentation. **(60 Marks)**
   1.2.1 Upstream process.
   1.2.2 Fermentation
   1.2.3 Downstream process

2. **2.1** List the characteristics of an ideal vaccine. **(10 Marks)**
   2.2 Discuss the advantages and disadvantages of killed vaccines. **(30 Marks)**
   2.3 Explain the sterility testing for killed vaccines. **(60 Marks)**

3. **3.1** List the advantages and disadvantages of injections. **(20 Marks)**
   3.2 Discuss the problems encountered with conventional insulin. **(40 Marks)**
   3.3 Write a short note on insulin pumps. **(40 Marks)**

PART B

4. **4.1** Discuss the applications of recombinant DNA technology in medicine. **(20 Marks)**

   4.2 Briefly explain how recombinant cells could be isolated from non-recombinant cells. **(30 Marks)**

   4.3 Write short note on the following
   4.3.1 Polymerase chain reaction **(20 Marks)**
   4.3.2 Restriction enzymes **(10 Marks)**
   4.3.3 Blotting technique **(20 Marks)**

5. **5.1** Which types of cultures are used in plant cell/tissue culture? **(20 Marks)**
   5.2 Briefly explain the steps involved in the plant tissue culture. **(35 Marks)**
   5.3 Explain the benefits of transgenic medicinal plants. **(45 Marks)**

PART C

6. **6.1** List the scale methods that are used to separate the enzymes which are produced in commercial. **(10 Marks)**

6.2 Describe potential advantages of immobilized enzymes over soluble enzymes. **(30 Marks)**

6.3 List the features of enzymes that makes it as a suitable candidate in the production of drugs. **(15 Marks)**

6.4 **6.4.1.** Briefly describe the production of streptokinase by fermentation **(20 Marks)**

6.4.2. Explain the therapeutic use of streptokinase. **(25 Marks)**