



UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

THIRD BPHARM PART II EXAMINATION - JUNE 2023

PH 3233 PHARMACEUTICAL BIOTECHNOLOGY – SEQ PAPER

TIME: TWO HOURS

INSTRUCTIONS

- There are **four** questions in part **A, B** and **C** in this SEQ paper.
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

PART A

1. “Once the protein is recovered from its producer source and concentrated, it must be purified to homogeneity.”
 - 1.1. State a laboratory method used to achieve the homogeneity of the proteins. (05 marks)
 - 1.2. List four different types of the method mentioned in 1.1. (10 marks)
 - 1.3. Briefly explain the most powerful highly selective method of protein purification mentioned in 1.2. (25 marks)
 - 1.4. List four advantages of the method described in 1.3. (40 marks)
 - 1.5. Briefly explain the term “diafiltration”. (20 marks)
2.
 - 2.1. List the three types of recipient cells which can result in, once the foreign DNA is inserted into the vector. (15 marks)
 - 2.2. List four restriction enzymes used in recombinant DNA technology. (10 marks)
 - 2.3. Briefly explain the action of the restriction endonucleases. (25 marks)

PART B

- 2.4. List three advantages of molecular diagnosis. (10 marks)
- 2.5. Write a short note on “agarose gel electrophoresis” technique which is used for the separation of nucleic acid. (15 marks)

PART C

2.6. Briefly describe the process of producing monoclonal antibodies. (25 marks)

3.

3.1. List three commonly used methods for the strain improvement in fermentation process. (15 marks)

3.2.

3.2.1. State the two main types of fermentation commonly used in industrial processes. (10 marks)

3.2.2. Briefly describe the types mentioned in 3.2.1. (30 marks)

3.3. List five advantages of microbial enzyme production over animal/plant enzyme production. (20 marks)

3.4. Briefly describe two commonly used irreversible enzyme immobilization methods. (25 marks)

4.

4.1. What is the role of culture media in cell cultures? (10 marks)

4.2.

4.2.1. What are the three basic classes of artificial media which differ in their requirement for supplementation with serum? (15 marks)

4.2.2. Briefly discuss how the types mentioned in 4.2.1 differ from each other. (25 marks)

4.3. State three applications of genetic engineering in the field of plant biology. (15 marks)

4.4. State four examples of disease conditions for which edible vaccines have been successfully developed. (10 marks)

4.5. Discuss the advantages and disadvantages of edible vaccines. (25 marks)

@@@@@@@@