



UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE
ALLIED HEALTH SCIENCES DEGREE PROGRAMME
THIRD BPHARM PART II EXAMINATION – JUNE/JULY 2016
PH 3233 PHARMACEUTICAL BIOTECHNOLOGY - (SEQ)

TIME: TWO HOURS

INSTRUCTIONS

- Answer **all** questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

1.

1.1.

- 1.1.1. Why are animal models important in biomedical research? *(10 marks)*
- 1.1.2. Explain the 3R concept in regulation of animal research. *(15 marks)*
- 1.1.3. Indicate unique features of Embryonic Stem Cells. *(15 marks)*
- 1.1.4. Explain how Embryonic Stem Cells can be used to generate transgenic mice. *(20 marks)*

- 1.2. What is “Molecular Farming”? Diagrammatically indicate the simple sequence of molecular farming. *(40 marks)*

2. Upstream and downstream processing involves in formulation of most of therapeutic agents in pharmaceutical biotechnology.

- 2.1. List the six basic steps involved in downstream processing. *(15 marks)*
- 2.2. List the steps involved in production of water for injection. *(15 marks)*
- 2.3. List five commonly used cell disruption methods used and briefly describe two methods. *(25 marks)*
- 2.4. Briefly describe the term ultrafiltration. *(25 marks)*
- 2.5. State five different chromatographic techniques and their basis of separation. *(20 marks)*

3. Whole blood and blood products are important in the management of acutely ill patients.

- 3.1. State the Blood to anticoagulant ration used in preservation of blood. *(05 marks)*
- 3.2. List three anticoagulants used in preservation of blood and state the function of each. *(10 marks)*
- 3.3. Define the term “additive solutions”. *(10 marks)*
- 3.4. State four advantages of separation of whole blood into blood components. *(10 marks)*
- 3.5. Describe the steps in processing platelet concentrate. *(25 marks)*
- 3.6. Briefly describe the term “stored plasma”. *(20 marks)*
- 3.7. Name three main plasma derivatives and state two available preparations of each derivative. *(20 marks)*

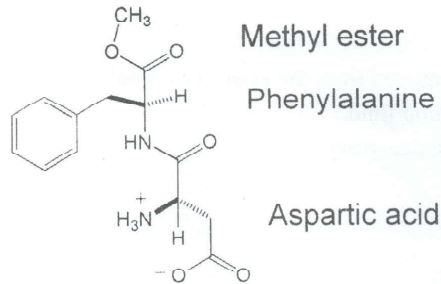
4. Answer following questions.

4.1. Briefly discuss the possible applications of enzymes in medicine. (25 marks)

4.2.

4.2.1. Identify the given molecule. (10 marks)

4.2.2. What are the safety concerns of using this compound? (15 marks)



4.3. Graphically explain the dynamics of batch fermentation and fed batch fermentation.

(25 marks)

4.4. 'Microbial strain selection' is the most important step in any fermentation process.

Explain strategies to select a mother culture for microbial fermentation process.

(25 marks)

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