Index no:.....

UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

THIRD BPHARM PART II EXAMINATION – DECEMBER 2017

PH 3233 PHARMACEUTICAL BIOTECHNOLOGY (SEQ)

TIME: TWO HOURS

INSTRUCTIONS

- There are **four (04)** questions in part A, B and C in the SEQ paper.
- Answer **each part in a separate booklet** given.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

PART A

1.

1.1 Sterile water is used as a medium for the down-stream processing.

1.1.1 List the steps of production of sterile water. (***10 marks***)

1.1.2 Briefly describe each step of production of sterile water from pure water. (***20 marks***)

1.2 List the steps of initial product recovery from the fermented cell culture. (***15 marks***)

1.3 Discuss briefly followings related to down-stream processing.

1.3.1 The importance to remove nucleic acid from homogenate. (***15 marks***)

1.3.2 **Two** methods used to remove nucleic acid. (***20 marks***)

1.4 In down-stream processing, the initial product concentration is an important step.

1.4.1 State why initial product concentration is important in down-stream processing. (***10 marks***)

1.4.2 List **four** methods used in initial product concentration. (***10 marks***)

2. Extraction of DNA is the initial step in recombinant DNA technology.

2.1 List the **four** steps in DNA extraction. (***10 marks***)

2.2 Describe briefly the differences in extraction of genomic DNA and plasmid DNA. (***20 marks***)

2.3. Describe briefly methods used in amplification of DNA. (***20 marks***)

2.4. Describe briefly **two** methods used in DNA quantification. (***20 marks***)

2.5. Briefly describe the **Sanger** sequencing method. (***20 marks***)

2.6. List **five** ethical, legal and social implications of the Human Genome Project. (***10 marks***)

39

Index no:.....

PART B

3.

3.1

3.1.1 List the key techniques/procedures of recombinant DNA technology. (***20 marks***)

3.1.2 List the key steps of generating transgenic knockout mice using embryonic stem cells. (***30 marks***)

PART C

3.2

3.2.1 Describe briefly the benefits of using plants in the production of pharmaceuticals. (***25 marks***)

3.2.2 List the risks and concerns of plant based pharmaceuticals. (***15 marks***)

3.2.3 What are the suggested alternatives for molecular farming? (***10 marks***)

4.

4.1 Briefly explain the conditions that are needed to be optimized at laboratory level after selecting a microbial strain in fermentation system. (***25 marks***)

4.2 Describe the characteristics of a batch fermentation system. (***25 marks***)

4.3 Differentiate commodity enzymes from specialty enzymes. (***10 marks***)

4.4 Write **one** use of following each therapeutic enzyme. (***15 marks***)

4.4.1 Prolactazyme

4.4.2 Collaginase

4.4.3 Streptokinase

4.5 Discuss the prospects of **microbial enzyme production system** over the other enzyme sources available in the nature. (***25 marks***)

@@@@@@@@