



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**  
**DEPARTMENT OF PHARMACY**  
**SECOND BPHARM PART I EXAMINATION – NOVEMBER/DECEMBER 2023**  
**PH 2153 PHARMACEUTICAL MICROBIOLOGY – SEO PAPER**

**TIME: TWO HOURS**

**INSTRUCTIONS**

- There are **four** questions in **part A, B, C and D** of this 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.
  - 1.1. Describe the structures of a typical bacterial cell giving the main functions. **(30 marks)**
  - 1.2. Describe the bacterial growth requirements. **(30 marks)**
  - 1.3. Explain the types of relationships between human/animal and microorganisms giving proper examples. **(40 marks)**
2.
  - 2.1. Define the following terms. **(25 marks)**
    - 2.1.1. Sterilization
    - 2.1.2. Disinfection
    - 2.1.3. Standard precautions

**PART B**

- 2.2.
  - 2.2.1. Define 'selective toxicity'. **(10 marks)**
  - 2.2.2.
    - 2.2.2.1. State the four categories of beta-lactam antibiotics. **(10 marks)**
    - 2.2.2.2. State the mode of action of beta-lactam antibiotics. **(10 marks)**
  - 2.2.3.
    - 2.2.3.1. State the mode of action of beta-lactamase inhibitors. **(04 marks)**
    - 2.2.3.2. List two examples for beta-lactamase inhibitors. **(06 marks)**

- 2.2.4. Briefly describe the disadvantages of Jone Stokes method. (15 marks)
- 2.2.5. List five resistance mechanisms of antibiotics. (20 marks)

### PART C

- 3.
- 3.1. State three general methods used for microbiological assay of antibiotics. (15 marks)
- 3.2. Draw and label the general structure of a virus. (15 marks)
- 3.3. Name two basic types of viral propagation techniques. (10 marks)
- 3.4. Write a brief account on "prions". (20 marks)
- 3.5. "Several medically important fungi are thermally dimorphic". Justify this statement. (10 marks)
- 3.6. Briefly explain the symptoms, preventive measures, diagnostic methods and treatment choices of fungal nail infection, a common fungal disease. (30 marks)

### PART D

- 4.
- 4.1.
- 4.1.1. Name the standard technique used to test the sterility of surgical catgut. (10 marks)
- 4.1.2. Briefly describe the technique that you have mentioned in 4.1.1. (20 marks)
- 4.1.3. State three strains of test microorganisms suitable to use for growth promotion test of the media used for the sterility test. (15 marks)
- 4.1.4. List three challenges that can be encountered in performing sterility tests. (15 marks)
- 4.2. Write five potential sources of contamination during the manufacturing process of pharmaceutical products. (20 marks)
- 4.3. List five methods that can be used to control contamination through facility design in pharmaceutical manufacturing. (20 marks)

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