

Original



UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE
ALLIED HEALTH SCIENCES DEGREE PROGRAMME
SECOND BPHARM PART I EXAMINATION – JUNE 2016
PH 2153 – PHARMAEUTICAL MICROBIOLOGY (SEO)

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. Answer **all** parts.

1.1

- 1.1.1 List **four (4)** examples for health care associated infections. (08 marks)
- 1.1.2 Name **four (4)** microorganisms that can cause health care associated infections mentioned under 1.1.1. (08 marks)
- 1.1.3 Briefly describe the methods of preventing transmission of health care associated infections. (14 marks)

1.2

- 1.2.1 Name **four (4)** equipments used in the microbiology laboratory. (04 marks)
- 1.2.2 Briefly describe the important daily maintenance steps of the equipment mentioned under 1.2.1. (16 marks)

1.3

- 1.3.1. Giving **one (1)** example for each, list **four (4)** types of parasites. (12 marks)
- 1.3.2. Explain briefly the various types of hosts. (16 marks)
 - Definitive host
 - Intermediate host
 - Paratenic host
 - Reservoir host
- 1.3.3. Define the term “vector”. (6 marks)
- 1.3.4. Giving **one (1)** example for each, name **two (2)** types of vectors. (8 marks)
- 1.3.5. List **four (4)** methods of transmission of parasites from one host to the other. (8 marks)

2. Answer **all** parts.

2.1.

- 2.1.1 List **five (5)** methods of transmission of infections in humans and state one infection for each method. (15 marks)
- 2.1.2 List **three (3)** bacterial virulence factors and state how each of them cause its effect. (15 marks)
- 2.1.3 Briefly describe non-immunologic host defenses against infections in humans. (20 marks)

2.2

- 2.2.1 Name the **three (3)** major types of fungal infections and give **two (2)** examples for each type. (15 marks)
- 2.2.2 List the different classes of antifungal agents and give **one (01)** example of an antifungal for each class. (15 marks)
- 2.2.3 Describe the mode of action of the classes of antifungal agents listed in 2.2.2. (20 marks)

3. Answer **all** parts.

3.1.

- 3.1.1 List the differences between a prokaryotic cell and an eukaryotic cell. (20 marks)
- 3.1.2 Write briefly on bacterial spores. (15 marks)
- 3.1.3 Briefly explain the laboratory techniques used for the diagnosis of bacterial infections. (25 marks)
- 3.1.4 Briefly explain the universal container with triple package that is used in the transport of infectious material. (20 marks)
- 3.1.5. List **four (4)** indications to use antibiotics in combination giving examples. (20 marks)

4. Answer **all** parts.

4.1.

- 4.1.1 Many important pharmaceutical products are manufactured using fermentation.
- i. What is industrial fermentation? (10 marks)
- ii. "Bio Reactor" is the equipment that is used to carry out industrial fermentation. Describe the necessary parameters those should be controlled in a bio reactor. (20 marks)
- iii. Based on Benzyl penicillin production, answer the following questions.
- a. Importance of selecting the correct organism (5 marks)
- b. Growth phase of the inoculating organism (5 marks)
- c. Selecting the best harvesting time period (5 marks)
- d. Increasing the Benzyl penicillin production (5 marks)
- 4.2 Pharmaceutical products are prone to undergo microbiological contamination if not properly protected. Hazard analysis and critical control points (HACCP) has been adopted by WHO as a way of ensuring the quality of pharmaceutical products.
- 4.2.1 What are the cardinal steps in HACCP? (15 marks)
- 4.2.2 Considering a clean room how would you apply the HACCP to maintain the clean room facility. (15 marks)
- 4.3 Describe briefly how the nutrient factors, water activity and partition hypothesis (pH) would affect the microbial growth in a pharmaceutical product. (20 marks)

@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@