THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF PHARMACY
ACADEMIC YEAR 2023/2024 – SEMESTER II

BACHELOR OF PHARMACY HONOURS
FMU3204 - PHARMACEUTICAL MICROBIOLOGY I - LEVEL 3
FINAL EXAMINATION
DURATION: TWO (02) HOURS

DATE: 23RD OCTOBER 2024 TIME: 1.30 P.M. – 3.30 P.M.

Index No.....

Part B – 02 Short Answer Questions (20 Marks)

1.

1.1 What is the difference between a primary pathogen and an opportunistic pathogen? (02 marks)

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1.2 Identify the key elements of bacterial virulence factors that involve in pathogenesis described in the statements below. (02 marks)

1.2.1 Bacteria enter host cells, leading to the formation of lesions.-

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1.2.2 Pathogens evade the immune system by mechanisms such as capsules and enzymes.-

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1.3 List three (03) main modes of pathogen transmission. (03 marks)

I.....

II.....

III.....

1.4 What does a lower Infectious Dose 50 (ID50) indicate about a pathogen? (03 marks)

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2.

2.1 List two (02) effects of repressor proteins in the lysogenic cycle. (02 marks)

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2.2 What happens if repressor proteins are inactivated in the lysogenic cycle? (02 marks)

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2.3 What does it mean if a bacterial strain is lysed by a specific phage? (02 marks)

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2.4 Which laboratory test uses bacterial lysis by specific phages to identify bacterial strains? (01 mark)

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2.5 Which laboratory method involves detecting clear areas in a bacterial culture to estimate the concentration of viruses? (01 mark)

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2.6 Write two (02) advantages of the method mentioned in question 2.5. (02 marks)

I.....

II.....

Part C – 02 Structured Essay Questions (60 Marks)

1.

1.1 Mention how antibiotics differ from synthetic antimicrobial chemotherapeutic agents in terms of their origin. (03 marks)

1.2 Outline the selective toxicity in antimicrobial drugs and its importance. (04 marks)

1.3 Identify the mode of action of the given antibiotics. (08 marks)

a) Vancomycin
b) Erythromycin
c) Norfloxacin
d) Polymyxin

1.4 Outline the difference between inherent and acquired antibiotic resistance in microorganisms. (04 marks)

1.5 Briefly explain how to minimize the development of antibiotic resistance in bacteria. (05 marks)

1.6 Write a short note on the human genome project. (06 marks)

2.

2.1. Write three (03) qualities of an ideal disinfectant. (03 marks)

2.2 Briefly describe the phenol coefficient technique used to evaluate antimicrobial potency of disinfectants and antiseptics. (05 marks)

2.3 If a disinfectant is found to be effective at a 1:120 dilution and phenol is effective at a 1:80 dilution under the same conditions, calculate the phenol coefficient for the disinfectant. (06 marks)

2.5 Identify two (02) high-temperature methods used for microbial control and provide a detailed explanation for one of the methods. (06 marks)

2.4 Explain the role of alcohols and quaternary ammonium compounds in microbial control. Compare their mechanisms of action, effectiveness, and typical applications. (10 marks)