

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER: MAY 2018

TITLE OF PAPER: MICROBIOLOGY AND IMMUNOLOGY

COURSE CODE: B404

TIME ALLOWED: THREE HOURS

- INSTRUCTIONS:**
1. ANSWER ANY **FOUR** QUESTIONS
 2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
 3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELLED DIAGRAMS

SPECIAL REQUIREMENTS: NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

[PLEASE TURN OVER]

Question 1

- a) Briefly explain how Gram-simple staining differs from the Gram-staining procedure. (1 mark)
- b) Name an infectious unit of a virus. (2 marks)
- c) Distinguish between the roles played by non-specific and specific defence systems in humans. (6 marks)
- d) List five examples of the members of the family Enterobacteriaceae. (5 marks)
- e) Describe how the survival curve of a microbe is determined if it is subjected to a lethal process. (1 mark)
- f) State the minimum number of methods that are employed in viral detection within tissues. (2 marks)
- g) Define the following: D value, LD₅₀ and ID₅₀. (3 marks)
- h) List two methods that are employed in characterising bacteria. (2 marks)
- i) Give three examples of penicillins and tetracyclines. (3 marks)

[Total Marks = 25]

Question 2

- a) Write an essay on the determinants of microbial pathogenicity. (12.5 marks)
- b) Explain the mechanisms of action of antimicrobial drugs. (12.5 marks)

[Total Marks = 25]

[PLEASE TURN OVER]

Question 3

- a) Write a brief microbiography of any human pathogen of your choice. (12.5 marks)
- b) Explain the different types of virus-cell interactions. (12.5 marks)

[Total Marks = 25]

Question 4

- a) Discuss the major phases of an animal's defensive systems based on the self versus non self recognition by the immune system. (4 marks)
- b) Summarize the role of the lymphokines and interferons in non-specific resistance to human infections. (9 marks)
- c) Explain the cellular and physiological mechanisms behind anaphylactic hypersensitivity Type 1. (5 marks)
- d) Provide a flow chart of the T-cell subsets and their functions and then explain how T_c and T_h react against viruses within host cells. (7 marks)

[Total Marks = 25]

Question 5

- a) Discuss malignant transformation by tumor inducing viruses. (12.5 marks)
- b) Discuss viral pathogenesis. (12.5 marks)

[Total Marks = 25]

Question 6

- a) Show a flow chart which demonstrates that multi potent stem cells in the bone marrow can differentiate into cells of the immune system. (10 marks)
- b) Explain the role of B cells in specific host resistance to human pathogens. (10 marks)
- c) Explain the concept of immunologic memory. (5 marks)

[Total Marks = 25]

[END OF QUESTION PAPER]