UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER: MAY 2016

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) How does negative staining differ from the Gram-stain procedure?   (1 mark)

b) Distinguish between a sterilant and a disinfectant   (1 mark)

c) Indicate the Gram's reaction of the following microorganisms: *Mycobacterium, Haemophilus, Staphylococcus, Corynebacterium, Klebsiella, Neisseria, Clostridium, Bacillus, Escherichia, Salmonella, Shigella and Vibrio spp.*   (6 marks)

d) Name one disease caused by each of the microorganisms listed in (c) above.   (6 marks)

e) If a microbe is subjected to a lethal process, how would you obtain its survivor curve?   (1 mark)

f) Indicate the minimum number of methods that are employed in viral detection within tissues.   (2 marks)

g) Define: D value, LD50 and ID50.   (3 marks)

h) List some methods that are employed in typing bacteria?   (2 marks)

i) Give some examples of penicillins and tetracyclines.   (3 marks)

[Total Marks = 25]

Question 2

a) Write an essay on the determinants of microbial pathogenicity.   (10 marks)

b) Explain the mechanisms of action of antimicrobial drugs.   (10 marks)

c) Cite some examples of clinically proven antibiotic resistance by bacteria.   (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 range of virus-cell interactions. (12.5 marks)

[Total Marks = 25]

Question 4

a) Explain how specific immunity arises from the cooperation of
various cells of the immune system (4 marks)

b) Summarize the role of the complement system 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) Explain the concepts behind tissue transplantation immunity. (3 marks)

e) Explain how cytotoxic and helper T cells react against viruses within host cells.
(4 marks)

[Total Marks = 25]

Question 5

a) Write an essay on malignant transformation by tumor inducing viruses.

(12.5 marks)

b) Write an essay on viral pathogenesis. (12.5 marks)

[Total Marks = 25]

Question 6

a) Show a flow chart which demonstrates that cells of the immune system arise from
a bone marrow stem cell. (5 marks)

b) Explain the role of B and T cells in specific host resistance to human pathogens.
(15 marks)

c) Explain the concept of immunologic memory. (5 marks)

[Total Marks = 25]