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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER: MAY 2017

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

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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) Distinguish between the roles played by non-specific and specific defence systems in humans. (6 marks)

d) List some examples of the members of the family Enterobacteriaceae. (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 autoimmune diseases. (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]

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Question 3

a) Write a brief microbiography of any human pathogen of your choice. (12.5 marks)

b) Write an essay on malignant transformation by tumor inducing viruses. (12.5 marks)

[Total Marks = 25]

Question 4

a) Outline the major phases of animal's defensive systems based on the self versus non self recognition by 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) 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) Explain the range of virus-cell interactions. (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 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 vaccines as an application of immulogical memory. (5 marks)

[Total Marks = 25]

[END OF QUESTION PAPER]