

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005

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 WHERE APPROPRIATE

SPECIAL REQUIREMENTS:

NONE

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

QUESTION 1

- (a) Draw and explain the structure of a monomeric antibody. [5 marks]
- (b) What are the characteristics of specific immune response? Elaborate. [5 marks]
- (c) Indicate whether the following grafts would be accepted or rejected by a patient:
 - (i) isograft [1 mark]
 - (ii) autograft [1 mark]
 - (iii) allograft [1 mark]
 - (iv) allograft + cytotoxic drugs [1 mark]
 - (v) heterograft + cytotoxic drugs [1 mark]
 - (vi) heterograft [1 mark]
- (d) What is immediate type 1 hypersensitive response in humans. [5 marks]
- (e) What is immunologic memory? Elaborate. [3 marks]

[TOTAL MARKS = 25]

QUESTION 2

Write an essay on virus-cell interactions.

[TOTAL MARKS = 25]

QUESTION 3

- (a) Give a flow chart on how to produce a genetically engineered bacterium. [10 marks]
- (b) How would you isolate plasmid DNA? [5 marks]
- (c) How would you propagate a recombinant plasmid? [6 marks]
- (d) Explain how self DNA is modified so that it is protected from the action of endonucleases during the production of a genetically engineered bacterium [4 marks]

[TOTAL MARKS = 25]

QUESTION 4

- (a) Show that the cells of the immune system originate from the bone marrow stem cell. [5 marks]
- (b) Demonstrate that specific immunity results from the cooperation of lymphocytes and macrophages. [7 marks]
- (c) Write an essay on T and B cells. What are their functions? [13 marks]

[TOTAL MARKS = 25]

QUESTION 5

- (a) Distinguish between the following:
 - (i) True pathogens versus opportunistic pathogens. [5 marks]
 - (ii) Infectivity versus virulence. [4 marks]
 - (b) Choose any two diseases caused by bacteria and explain their pathogenecities. [8 marks]
 - (c) Explain the biology of influenza virus. [8 marks]
- [TOTAL MARKS = 25]

QUESTION 6

Write an essay on bacterial spores. [TOTAL MARKS = 25]