

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2007

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

Write an essay on "sporogenesis" and its implications to the survival mechanisms of bacteria. [TOTAL MARKS = 25]

QUESTION 2

- a) Give a diagrammatic representation on how to produce a genetically engineered bacterium. (10 marks)
- b) How would you isolate plasmid DNA in one of the steps in (a) above? (5 marks)
- c) How would you propagate a recombinant plasmid? (6 marks)
- d) Explain how "self DNA" is protected from the action of endonucleases during the production of a genetically engineered bacterium. (4 marks)

[TOTAL MARKS = 25]

QUESTION 3

- a) Write an essay on B and T cells. What are their functions? (17 marks)
- b) Cite some examples that can demonstrate the concept of graft acceptance or rejection. (8 marks)

[TOTAL MARKS = 25]

QUESTION 4

- a) What is an infectious unit of a virus? (4 marks)
- b) Is cancer caused by viruses only? Elaborate. (6 marks)
- c) Cancer is a growth disease of cells. Discuss. (15 marks)

[TOTAL MARKS = 25]

QUESTION 5

- a) Provide a flow chart to demonstrate that the cells of the immune system originate from the bone marrow stem cell. (5 marks)
- b) Provide a flow chart to demonstrate that specific immunity results from the cooperation of lymphocytes and macrophages. (7 marks)
- c) Draw and explain the structure of a monomeric antibody. (7 marks)
- d) Briefly explain the immediate type 1 (anaphylactic) hypersensitive response in humans. (6 marks)

[TOTAL MARKS = 25]

QUESTION 6

Explain the following:

- a) Viral pathogenesis (12.5 marks)
- b) Virus-cell interactions (12.5 marks)

[TOTAL MARKS = 25]