UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2007/2008

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 bacterial spores.

[TOTAL MARKS = 25]

QUESTION 2

Explain the following:

a) Virus-cell interactions. **(12.5 marks)**

b) Viral pathogenesis. **(12.5 marks)**

[TOTAL MARKS = 25]

QUESTION 3

a) Use *Staphylococcus aureus* as a model organism to explain the concept of microbial virulence factors. **(10 marks)**

b) How do the following soluble mediators of the non-specific immune system act to protect the human body from invading microorganisms?

(i) Interferons **(5 marks)**

(ii) The compelement system **(5 marks)**

(iii) Lymphokines **(5 marks)**

[TOTAL MARKS = 25]

QUESTION 4

a) Write an essay on B and T cells. What are their functions? **(17 marks)**

b) Explain the concept of transplantation immunity. **(8 marks)**

[TOTAL MARKS = 25]

QUESTION 5

a) How important is the bone marrow stem cell in an immune response? **(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 an immunoglobulin. **(7 marks)**

d) What is an anaphylaxis? **(6 marks)**

[TOTAL MARKS = 25]

QUESTION 6

a) How would you discriminate between similar strains of *Klebsiella pneumoniae*? **(12.5 marks)**

b) Use *E. coli* as a model organism to explain the regulation of gene expression in microorganisms. **(12.5 marks)**

[TOTAL MARKS = 25]