

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

THEORY: GENETICS SBB 1204

MAY 2005

2 HOURS (100 marks)

INSTRUCTIONS

Answer **Four (4)** Questions. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams.

1. Explain natural mechanisms by which prokaryotic cells exchange genetic material.
2. Describe two different methods used in DNA sequencing.
3. (a) Write an essay on at least five ways in which point mutations could arise. (20 marks)
(b) Describe how to test for mutagenicity of a substance. (5 marks)
4. Write short notes on the following.
 - (a) aneuploidy (5 marks)
 - (b) chromosome banding (5 marks)
 - (c) satellite DNA (5 marks)
 - (d) heterosis (5 marks)
 - (e) epistasis (5 marks)
5. Write an essay describing in detail the current concept of a gene. (Use diagrams where appropriate).
6. Discuss the genetic basis of sex determination in animals.

END OF EXAMINATION