

Spring Examinations, 2003/2004

Exam Code(s)	<u>3BS9, 3BO2, 3BY1, 3BY2, 1EM1</u>
Exam(s)	<u>3rd Science, 3rd Biomedical, 3rd Biotechnology</u>
Module Code(s)	<u>GT301</u>
Module(s)	<u>Genetics</u>
Paper No.	<u>No. 1</u>
Repeat Paper	<u>Special Paper</u>
External Examiner(s)	<u>Professor C M Brown</u>
Internal Examiner(s)	<u>Professor J A Houghton</u>

Instructions:

Answer **FIVE** Questions – All questions carry equal marks.

Please indicate clearly the numbers of the questions answered on the first page of your answer book.

Duration 3 hrs
No. of Answer books

Requirements:

Handout
MCQ
Statistical Tables
Graph Paper
Log Graph Paper
Other Material

No. of Pages 2
Department(s)

- Q1.** With the aid of diagrams, explain the process of transcription as it occurs in prokaryotes.
- Q2.** Write an essay comparing the different mechanisms of DNA repair.
- Q3.** Write notes on two of the following with reference to the manipulation and study of human DNA:
- (i) Creating cDNA libraries
 - (ii) DNA fingerprinting
 - (iii) Polymerase Chain Reaction (PCR)
 - (iv) DNA probes
- Q4.** Write notes on two of the following:
- (i) Repetitive DNA
 - (ii) The genetics of Prader-Willi and Angelman syndromes
 - (iv) Telomeres
 - (v) Chromosome banding
 - (vi) Genetic counselling
- Q5.** Write notes on three of the following malfunctions of the immune system that are directly due to inheritance characteristics:
- (i) X-linked Agammaglobulinaemia
 - (ii) X-linked Hyper IgM (HPX) Syndrome
 - (iii) Wiskott-Aldrich Syndrome (WAS)
 - (iv) Severe Combined Immune Deficiency (SCID)
- Q6.** Write notes on two of the following:
- (i) Huntington's Disease and Genetic Anticipation
 - (ii) Phenylketonuria
 - (iii) Sex linkage
 - (iv) Polygenic inheritance
 - (v) Tay Sachs Disease: include in your answer a mention of the role of intron mutation in this inherited disease.
- Q7.** Write an essay on "Autosomal Aneuploidy: before and after birth".