

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE
IN MICROBIOLOGY AND BIOTECHNOLOGY**

BOTA 223: PRINCIPLES OF MOLECULAR GENETICS

STREAMS: BSC MICB (Y2S2)

TIME: 2 HOURS

DAY/DATE: TUESDAY 02/11/2021

11.30 A.M – 1.30 P.M.

INSTRUCTIONS

Answer all the questions in section A and **TWO** questions in section B
Do not write anything on the question paper.

SECTION A (30 marks)

1. State the functions of the following enzymes in DNA replication:
 - (i) DNA Ligase. (1 mark)
 - (ii) DNA gyrase. (1 mark)
 - (iii) SSB proteins. (1 mark)
2. Outline point mutations that occur in DNA sequences encoding proteins. (5 marks)
3. Outline the properties of the mRNA proposed by Jacob and Monod. (5 marks)
4. List four characteristics of each of the three DNA structures. (6 marks)
5. Compare and contrast the prokaryotic and eukaryotic promoter. (5 marks)
6. Discuss the proposed model of DNA replication. (6 marks)

SECTION II (40 marks)

7. (a) Describe the mechanisms of terminating translation in prokaryotes. (10 marks)
(b) Discuss part of chromosome structure. (10 marks)
 8. Describe termination methods of transcription in eukaryotes. (20 marks)
 9. Discuss DNA replication. (12 marks)
(b). Discuss application of recombinant DNA technology. (8 marks)
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