

CHUKA



UNIVERSITY

SUPPLEMENTARY / SPECIAL EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF BACHELOR DEGREE IN
BIOLOGICAL SCIENCE**

BOTA 413:MOLECULAR AND MICROBIAL GENETICS

STREAMS: BSc. ANSC

TIME: 2 HOURS

DAY/DATE: MONDAY 16/11/2020

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- Answer all questions in section A and any two in section B

SECTION A (30 MARKS)

1. Describe how base pairing occurs in DNA (3 Marks)
2. Describe the structure of a nucleotide (5 marks)
- 3 (a) Describe the role of the following enzymes
 - i. Topoisomerase (2 Marks)
 - ii. Helicase (2 Marks)
 - iii. Primase (2 Marks)
4. Describe the characteristics of the genetic code (5 Marks)
5. Describe the two basic components of an operon (4 Marks)
6. Explain why DNA replication is considered as semiconservative (2 Marks)
7. Describe the types of DNA mutations (5 Marks)

SECTION B (40 MARKS)

8. Discuss DNA replication process (20 Marks)
 9. Discuss the molecular techniques that are used for amplification of DNA (20 Marks)
 10. Discuss the mechanisms of genetic recombination in bacteria (20 Marks)
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