(25)

(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018 ACADEMIC YEAR

SECOND YEAR 2ND SEMESTER SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY, BACHELOR OF SCIENCE IN BIORESOURCE MANAGEMENT, BACHELOR OF EDUCATION SCIENCE AND BACHELOR AGRICULTURE EDUCATION AND EXTENSION

COURSE CODE: SBT 223

COURSE TITLE: MICROBIAL GENETICS

DATE: 12th October, 2018 **TIME:** 3:00 -5:00 p.m.

INSTRUCTIONS TO CANDIDATES

Answer Question one (1) and any other two (2) Questions. Question one is compulsory and carries 30 marks, the other Questions carry 20 marks each.

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over

QUESTION ONE

a) State four types of gene mutations. (4 Marks)
b) Distinguish between sex linked traits and sex limited traits. (4 Marks)
c) Describe the principles of base pairing. (4 Marks)
d) State four roles of mutation. (4 Marks)
e) Using a specific example, explain how multiple alleles inheritance works. (4 Marks)
f) Write short explanatory notes on:-
   i. Karyotype (2 Marks)
   ii. Heterochromatin (2 Marks)
g) Explain two methods of making a cell competent in gene transfer. (2 Marks)
h) Describe four types of mutagens. (4 Marks)

QUESTION TWO

a) Describe transduction as a means in which gene transfer occurs. (10 Marks)
b) State three distinct features of a genetic material. (6 Marks)
c) DNA strand is a double helix and anti-parallel. Explain the statement. (4 Marks)

QUESTION THREE

a) Briefly explain the roles of DNA as a genetic material in a living organism. (8 Marks)
b) Explain using appropriate genetic symbols the possible blood groups of children whose parents are both heterozygote with the father being blood group A and mother blood group B. (9 Marks)
c) Name three types of RNAs. (3 Marks)

QUESTION FOUR

a). Distinguish between metacentric and acrocentric chromosomes. (4 Marks)
b). Explain the structural changes in the base sequences after gene mutation. (16 Marks)

QUESTION FIVE

a) Using relevant examples, describe gene regulation under the following headings:- (7 Marks)
   i. Enzyme induction (7 Marks)
   ii. Enzyme repression (6 Marks)
a) Describe the procedure of Nucleic acid hybridization.