(35)

(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER
MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: **SBT 424**

COURSE TITLE: **MOLECULAR GENETICS**

DATE: *Wednesday 31st August, 2022.* **TIME:** *2:00 – 4:00 P.M.*

INSTRUCTIONS TO CANDIDATES

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

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over

Q1.

a) Define the term gene (1Mark)

b) What is splicing? (2Marks)

c) Explain role of DNA helicase (2Marks)

d) Write short notes on action on DNA ligase (2Marks)

e) Explain briefly process of Alkylation (3Marks)

f) Give two roles of DNA in protein synthesis (2Marks)

g) Briefly explain the activities of DNA polymerase – I (2Marks)

h) Describe Okazaki fragment formation (2Marks)

i) Give three enzymes and their functions in eukaryotic DNA replication (3Marks)

j) Define the term transcription (2Marks)

k) What is the role of t-RNA in translation? (2Marks)

l) What is a DNA nucleotide? (2Marks)

m) Give three major differences between DNA and RNA molecules? (3Marks)

n) What are transcription factors? (2Marks)

Q2. Describe the molecular mechanism of eukaryotic DNA replication (20Marks)

Q3. Describe the molecular mechanisms of DNA damage and repair (20Marks)

Q4. Explain the molecular mechanism of eukaryotic DNA transcription (20Marks)

Q5. Describe Polymerase Chain Reaction (PCR) in terms of principle, steps, advantages, and applications (20Marks)