(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2020/2021 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF BIOLOGY AND BIORESOURCE MANAGEMENT AND CONSERVATION

COURSE CODE: **SBL 122**

COURSE TITLE: **BIOLOGICAL TECHNIQUES**

DATE: Tuesday 20th July, 2021. **TIME:** 8:00 – 10:00 a.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 3 printed pages. Please Turn Over

Q1(i) Define the following terms as used in Histology and Microscopy.

a) Aseptic technique
b) Depth of focus
c) Embedding
d) Normal solution
e) Spherical aberration (5 marks)

(ii) State and explain the principle of Electron Microscopy. (5 marks)

(iii) Distinguish between

a. Agar broth and Agar plate
b. Contaminated and mixed culture
c. Mordant and stain
d. Permanent and temporary slides
e. Sterilization and disinfection (5 marks)

(iv) Write short notes on

a) Ringers' solution
b) Buffer solution (5 marks)

(v) State and explain the principles governing the International Code of Zoological Nomenclature (ICZN) (5 marks)

(vi) Explain how you would prepare 1μM Solution of Hydrochloric Acid (HCL). Given that the density of HCL is 1.16g/ml, Purity= 40% and the molecular weight 36.48g/mol. (5 marks)

Q2 Discuss the principles of Fluorescence Microscopy. (20 marks)

Q3 As a Research Scientist you have been instructed to find out if a certain plant disease causes abnormal cellular growth. Explain the steps you would take. (20 marks)

Q4 Describe the process of isolating pure colonies of *Escherichia coli* from contaminated water. (20 marks)

Q5 Discuss the procedure for cleaning and articulating large mammal skeleton for museum display. (20 marks)