



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER SPECIAL/SUPPLEMENTARY EXAMINATION

FOR THE DEGREE OF BACHELOR OF EDUCATION

COURSE CODE: ESM 221

COURSE TITLE: BIOLOGICAL TECHNIQUES

DATE: 22/09/2017

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: 3 Hours

This paper consists of 2 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

- Q1 (i) Define the following terms
 a) Microscopy
 b) sterilization
 c) Magnification
 d) Fixation
 e) Numerical aperture (5 marks)
- (ii) State and explain the principles of Spectrophotometry. (5 marks)
- (iii) Distinguish between
 a. Synthetic and Complex media
 b. Differential and Selective media
 c. Molisch and Barfoeds test
 d. Histology and microtony
 e. Molar and Molal solutions (5 marks)
- (iv) Explain the importance of Botanical and Zoological collections in a teaching and Research institutions. (5 marks)
- (v) Compare and contrast digital and film photography. (5 marks)
- (vi) Explain how to prepare 1mM 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 bright field microscopy. (20 marks)

Q3 As a laboratory manager you have received an autopsy specimen from a patient suspected to be suffering cancer. Process the specimen to approve/disapprove this suspicion. (20 marks)

Q4 Discuss the techniques used to culture the following organisms in the laboratory
 (a) Amoeba
 (b) Paramecium (20 marks)

Q5 As a teacher, you have been charged with the responsibility of collecting plant specimens in the field for taxonomic work.
 a) Explain how you will prepare for the collection work. (5marks)
 b) Describe how you will process the specimens until they are incorporated in the Herbarium. (15 marks)