(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2019/2020 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER

SPECIAL/ SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF EDUCATION (SCIENCE) (B. ED SCIENCE) AND BACHELOR OF SCIENCE (B. SC BIOLOGY)

COURSE CODE: SZL211

COURSE TITLE: FUNDAMENTALS OF CELL BIOLOGY

DATE: 10th February, 2021 **TIME:** 11:00 -1:00 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

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Q1.)

a) Mitosis is divided into four stages; 4mks

i) In which of the stages of mitosis does spindle fibres contract into visible structures.

ii) outline the functions of mitosis

iii) How do the first and second meiotic divisions differ?

iv) Outline possible errors and consequences of meiotic divisions.

b) Explain how rate of cell cycle is regulated in tissues. 2mks

c) State the significance of meiosis. 4mks

d) State the features of active transport. 4mks

e) Describe briefly how glucose is transported uphill from gut lumen into blood stream. 5mks

f) Give an illustration of a generalized animal cell. 4mks

g) Describe the principles of modern cell theory. 3mks

h) Explain the functions of the following organelles:

i) Lysosomes. 1mk

ii) Peroxisomes. 1mk

i) Describe the effect on shape of a cell placed in the following solutions:

i. Hypotonic. 1mk

ii. Hypertonic. 1mk

Q2.)

a) Draw a cross section of a chloroplast and discuss the process of Photosynthesis. 15mks

b) Describe how chloroplast uses carbon dioxide to make glucose. 5mks

Q3.)

a) Describe the process of meiotic cell division. 10mks

b) Discuss cell transport processes. 10mks

Q4.)

a) Using a diagram, describe the fluid-mosaic model of a plasma membrane. 14mk

b) Describe with the aid of a diagram the structure of a chromosome. 6mks

Q5.)

a) Discuss the different types of cell junctions 10mks

b) Identify three major classes and composition of filaments that make up cytoskeleton and state the functions of each 6mks

c) Cell signaling is important to living cells. Citing categories of signaling discuss this statement 4mks