EMBU UNIVERSITY COLLEGE

(A Constituent College of the University of Nairobi)

2015/2016 ACADEMIC YEAR

SECOND SEMESTER EXAMINATION

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

AEX 203: CELL BIOLOGY

DATE: APRIL 6, 2016 **TIME: 11:00-01:00**

INSTRUCTIONS:

Answer Question ONE and ANY Other TWO Questions

QUESTION ONE

a) Discuss the properties of cell organelles involved in cellular digestion. (5 Marks)

b) Justify why a cell will not survive if it is enucleated. (5 Marks)

c) Describe the structure and briefly explain the functions of the smooth endoplasmic reticulum (SER). (5 Marks)

d) Explain the central dogma of molecular biology. (5 Marks)

e) i) Discuss why interphase is not a resting stage during cell division. (2 Marks)

ii) Meiosis is important in sexually reproducing organisms. Explain (3 Marks)

f) The vascular tissue is important for normal functioning in mammals. Discuss. (5 Marks)

QUESTION TWO

A student wants to transform corn plants with a drought tolerance gene. Guide him on suitable methods for transforming the plant cells. (20 Marks)

QUESTION THREE

a) A farmer has provided plant material for molecular diagnosis. Explain how you would extract deoxyribonucleic acid (DNA) from the sample. (10 Marks)

b) You have been given responsibility over a modern agricultural farm laboratory. Justify why you need polymerase chain reaction (PCR) equipment in the lab. (10 Marks)

QUESTION FOUR

a) Discuss the different types of cell junctions. (10 Marks)

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

c) Cell signaling is important to living cells. Citing categories of signaling pathways, discuss this statement. (4 Marks)

QUESTION FIVE

During Embu University College open day you have been requested by the university to express your views on genetic engineering. Justify to the audience the need to use genetic engineering in agriculture. (20 Marks)

--END--