



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE IN BIOLOGY

SZL 207:ESSENTIALS OF CELL BIOLOGY

DATE: 25/7/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS: answer question one and any other questions

- 1 Answer Question 1 (**compulsory**) and **any two** questions in Section B.
- 2 Use clean well labelled diagrams wherever appropriate.

SECTION A

QUESTION ONE COMPULSORY (30 MARKS)

- a) Briefly describe the following terms:-
 - (a). Receptor (1 mark)
 - (b). Ligand (1 mark)
 - (c). Connexins (1 mark)
- b) Describe the following cellular junction and their functions:
 - (a) gap junctions (1½ marks)
 - (b). Tight junction (1½ marks)
- c) Briefly discuss the following mechanisms of cellular communication:-
 - i. Endocytosis (1 mark)
 - ii. exocytosis (1 mark)
 - iii. phagocytosis (1 mark)
- d) Briefly discuss the main stages of cellular communication (3 marks)
- e) Define hormones and explain the role in communication between cells (3 marks)
- f) Explain the term antigen presentation (3 marks)

- g) Explain the following pathways of cell death:
- i. Necrosis (1½ marks)
 - ii. Apoptosis (1½ marks)
 - viii. Differentiate between necrosis and apoptosis (3 marks)
- h) Explain why a cancer cell defies its own control mechanisms (3 marks)
- i) Distinguish between benign and malignant tumours (3 marks)

SECTION B

QUESTION TWO

Discuss the applications of tissue culture in sciences and industry (20 marks)

QUESTION THREE

Discuss Major histocompatibility complex molecules (20 marks)

QUESTION FOUR

Discuss the various causing agents of cancer disease (20 marks)

QUESTION FIVE

Describe the various ways in which the cell membrane aids in recognition of signals from other cells (20 marks)