



MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 207:ESSENTIALS OF CELL BIOLOGY

DATE: 22/1/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

1. Answer Question one (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:-
 - i. Receptor (1 mark)
 - ii. Ligand (1 mark)
 - iii. Connexins (1 mark)
- b) Describe the following cellular junction and their functions:
 - i. gap junctions (1½ marks)
 - ii. 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)
- h) Differentiate between necrosis and apoptosis (3 marks)
- i) Explain why a cancer cell defies its own control mechanisms (3 marks)
- j) Distinguish between benign and malignant tumours (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss the applications of tissue culture in sciences and industry

QUESTION THREE (20 MARKS)

Discuss Major histocompatibility complex molecules

QUESTION FOUR (20 MARKS)

Discuss the various causing agents of cancer disease

QUESTION FIVE (20 MARKS)

Describe the various ways in which the cell membrane aids in recognition of signals from other cells