



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (ANALYTICAL CHEMISTRY)

SBC 100: STRUCTURE AND FUNCTION OF BIOMOLECULES

DATE: 13/8/2021

TIME: 11:00 – 1:00 PM

INSTRUCTIONS

Answer All Questions In Section A And Any Other Two Questions In Section B

SECTION A (COMPULSORY)

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Using examples, explain the meaning of informational biomolecules. (3 marks)
- b) Explain the role of DNA in living organisms. (3 marks)
- c) Briefly, describe the difference in structure between ketones and aldehydes. (3 marks)
- d) Describe the substrate binding mechanisms by enzymes. (3 marks)
- e) Differentiate between saturated and unsaturated fatty acids and give an example in each case. (3 marks)
- f) Discuss the three main classes of proteins which correlate with the typical tertiary structures. (3 marks)
- g) Describe the process degradation of carbohydrates in body cells (3 marks)
- h) Explain the meaning of protein conformations. (3 marks)
- i) Explain the biological significance of proteins in cell signaling and ligand binding (3 marks)
- j) Describe the basic structural organization and composition of lipids (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

Discuss the structural organization and function various types of polysaccharides

QUESTION THREE (20 MARKS)

Describe the biological functions of lipids.

QUESTION FOUR (20 MARKS)

- a) Explain the four distinct aspects of protein structure. (10 marks)
- b) Write short notes on the process of protein biosynthesis. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the main ways of controlling enzyme activity in cells. (10 marks)
- b) Explain the molecular composition, size and tology of nucleic acids. (10 marks)