



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DEGREE IN BACHELOR OF
SCIENCE IN ANALYTICAL CHEMISTRY

SBC 201: PROTEINS AND ENZYMES

CODE: SBC 201

UNIT TITLE: PROTEINS AND ENZYMES

Date----- Time -----

Instructions

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

SECTION A

Question 1.

- a) Describe three ways of protein denaturation (3 marks)
- b) Describe the effect of pH on the charge of a protein (3 marks)
- c) Outline the functions of proteins (3 marks)
- d) Giving examples, describe the use of enzyme inhibitors as drugs (3 marks)
- e) Describe any three types of bonds that stabilise the tertiary structure of proteins (3 marks)
- f) Describe the principle of two dimensional gel electrophoresis (3 marks)
- g) Giving examples, outline the significance of the primary structure of a protein on the function of the protein (3 marks)
- h) Describe the effect of enzyme and substrate concentration on enzyme activity (3 marks)
- i) Describe how enzymes are named and classified (3 marks)
- j) Describe the different types of enzyme inhibitors(3 marks)



SECTION B

Questions 2.

Using Hemoglobin and myoglobin as an example, discuss the quaternary structure of proteins (20 marks)

Questions 3.

Discuss enzyme regulation models (20 marks)

Questions 4.

- a) Discuss the two models that seek to explain enzyme activity and specificity (8 marks)
- b) Using the enzyme active site, discuss the catalytic power of enzymes (12 marks)

Question 5

Discuss any four methods of separating proteins (20 marks)