GREAT ZIMBABWE UNIVERSITY

SIMON MAZORODZE SCHOOL OF MEDICAL AND HEALTH SCIENCES

DEPARTMENT OF BIOMEDICAL SCIENCES: BIOCHEMISTRY

BACHELOR OF SCIENCE/BACHELOR OF SCIENCE HONOURS DEGREE IN BIOMEDICAL SCIENCES

LEVEL 1 SEMESTER 2

SUPPLEMENTARY PROFESSIONAL EXAMINATION

MODULE CODE:	BMS102
MODULE NARRATION:	BIOCHEMISTRY
DATE:	November 2024
DURATION:	3 HOURS
EXAMINER	Mr. P. Dube

INSTRUCTION TO CANDIDATES:

1. Answer **Five** out of **Eight** questions
2. Each question carries 20 marks
3. Start each question on a new page
4. This question paper consists of 3 printed pages

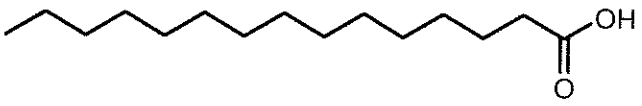
NB: DO NOT TURNOVER THE QUESTION PAPER OR COMMENCE WRITING UNTIL INSTRUCTED TO DO SO

1.

a. Give an outline of how enzymes are classified. (16 marks)
b. Using one example, explain how the inhibition of an enzyme may be used in the treatment of disease. (4 marks)

2. Briefly describe the functions of the cell structures below:
   a. mitochondria
   b. lysosomes
   c. Golgi apparatus
   d. endoplasmic reticulum
   e. plasma membrane. (4 marks each)

3. The structure of a saturated fatty acid is shown in the diagram below.



   a. Give an outline of the oxidation of the fatty acid to give acetyl CoA. (12 marks)
   b. Explain the conditions that lead to ketoacidosis. (4 marks)
   c. Describe the structure and function of the proteosome complex. (4 marks)

4. Describe the **FOUR** ways of regulating cholesterol synthesis. (20 marks)

5. Distinguish between humoral and cell-mediated immunity explaining the overlaps between the two types of immunity. (20 marks)

6.

a. Describe the roles of **THREE** different types of RNA. (12 marks)
b. Discuss **TWO** mechanisms of DNA repair. (8 marks)

7.

a. Describe the importance of phosphofructokinase in the metabolism of glucose. (4 marks)
b. Explain how emulsifying agents act. (4 marks)
c. Describe the structure of **TWO** named antibodies and discuss how each of their structure is related to its function. (12 marks)

8.

a. D-glucose that is recrystallized from water has a specific rotation [α] = +112°. When a solution of the recrystallized glucose is allowed to stand, the specific rotation gradually changes until [α] = +52.7°. Explain the basis of the observations. (4 marks)

b. Discuss the effect of temperature on the activity of an enzyme. (4 marks)

c. Give an account of the biosynthesis of pyrimidine nucleotides. (12 marks)