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DEPARTMENT OF PHYSICAL SCIENCES

EXAMINATION FOR THE AWARD OF DEGREE IN BACHELOR OF SCIENCE IN
BIOCHEMISTRY AND BIOMEDICAL SCIENCE
BIOC 310: ENZYMOLOGY (2019/2020)

INSTRUCTIONS:

Answer question ONE and any other TWO questions

Do not write on the question paper

QUESTION ONE

- a)
- i. According to the Michaeli's–Menten equation, what is the v/V_{\max} ratio when $[S]=4 K_m$?
(3 marks)
 - ii. Giving examples distinguish between zymogens and isozymes. (2 marks)
- b) Using **glycogen phosphorylase** enzyme as an example, explain regulation by allosteric effectors. (5 marks)
- c) Describe the properties of active site of enzymes. (4 marks)
- d) Distinguish between concerted and sequential models of allosteric binding. (4 marks)
- e) Explain the major classes of enzyme classification. (6 marks)
- f)
- i. Briefly describe how penicillin exerts its antimicrobial effect. (3 marks)
 - ii. Give any 3 biotechnological applications of enzymes. (3 marks)

QUESTION TWO

- a) Explain in detail the factors affecting enzyme activity. (10 marks)
- b) Illustrate the mechanism of action of a chymotrypsin. (10 marks)

QUESTION THREE

- a) Illustrate the mechanism of action of lysozyme. (10 marks)
- b) Distinguish between the different types of enzyme inhibitors. (10 marks)

QUESTION FOUR

- a) Derive the Micheali's-Menten equation and illustrate its graphical representation. (10 marks)
- b) Describe any three catalytic mechanisms of enzymes. (6 marks)
- c) Describe the general properties of enzymes. (4 marks)