



MOI UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR
(ACADEMICS, RESEARCH & EXTENSION)

UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR
THIRD YEAR FIRST SEMESTER EXAMINATION

FOR THE DEGREE OF
BACHELOR OF SCIENCE
AND
BACHELOR OF SCIENCE WITH EDUCATION

COURSE CODE: BIO 310

COURSE TITLE: PROTEINS, ENZYMES, AND VITAMINS

DATE: 7TH FEBRUARY, 2018 **TIME:** 11.40 A.M. – 2.40 P.M.

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- SEE INSIDE

THIS PAPER CONSISTS OF (3) PRINTED PAGES

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(MAIN EXAMINATION, FEB 2018)

3 hours

INSTRUCTION TO CANDIDATES

This paper consists of FOUR questions. Answer question ONE which is compulsory (30 marks) and any other two questions from question two, three and four (20 marks each)

QUESTION ONE (Compulsory): 30 marks

- a) Define the following terminologies as used in biochemistry
- i) Protein Denaturation (2 Marks)
 - ii) Buffer (2 Marks)
 - iii) Peptide linkage (2 Marks)
- b) Co factors (2 Marks)
- c) Distinguish between water- soluble and a fat soluble vitamin. (2 Marks)
- d) Describe the significance of the Michaelis Menten constant (K_m). (5 Marks)
- e) Using appropriate examples describe conjugate proteins (5 Marks)
- f) Describe the bonds that stabilize the higher orders of the protein molecule (10 Marks)

QUESTION TWO (20 marks)

- i. By giving specific examples, discuss the roles of proteins in:
- a. Transport (2 Marks)
 - b. Storage (2 Marks)
 - c. Regulation of biological processes (2 Marks)

d. Catalysis

e. Defence

scaly.
wound healing (2 marks)

(2 marks)

(6 Marks)

iii. Differentiate between competitive and non-competitive inhibitions.

(4 Marks)

QUESTION THREE. (20 Marks)

a) Give the functions, food sources, and deficiency states/symptoms associated with the following vitamins.

i. Vitamin C

(5 Marks)

ii. Vitamin B₁₂

(5 Marks)

iii. Riboflavin

(5 Marks)

iv. Explain why water soluble Vitamins must be consumed in large amounts (5 Marks)

QUESTION FOUR (20 marks)

a) Describe the theoretical models that explain the formation of the enzyme substrate complex. (6 Marks)

b) What are the possible fragments when the following polypeptide chain is treated with trypsin.
N-Asp-Ala-Gly- Arg-His-Lys-Gln-Trp-Cys-Trp-Lys-Ser-Glu-Asn-Leu-Ile-Arg-Thr-Try-C(4 Marks)

c) Michaelis-Menten plots of enzyme catalyzed reactions gives approximate values of K_m and V_{max} . How can you determine the accurate values? (10 Marks)

2
4
1/2