



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2024/2025

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF SCIENCE IN BIOCHEMISTRY

### SHC 3300: ENZYMOLOGY

DATE: JANUARY 2025

TIME: 2 HOURS

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INSTRUCTIONS: Answer question *one* and any other *two* questions

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#### QUESTION ONE (30 MARKS)

- Illustrate the mechanism of action of FAD as coenzyme in succinate dehydrogenase (3 marks)
- Describe the basis of five interaction of substrate on active site of carboxylpeptidase (5 marks)
- Explain the four steps in conversion of pyruvate to Acetyl CoA (2 marks)
- Illustrate the Eachie – hofstee plot and explain its drawback (7 marks)
- Explain the types of enzyme specificity (2 marks)
- Outline the assumptions of michaelis menten equation (2 marks)
- Define the term turnover number and give examples (2 marks)
- Describe the enzyme replacement therapy for inborn errors of metabolism (3 marks)
- Explain the determination of the kinetic constants for enzyme catalysed reactions (4 marks)
- Define the following terms Apoenzyme, holoenzyme and prosthetic group (3 marks)

#### QUESTION TWO (20 MARKS)

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a) Illustrate the multisubstrate reactions (10 marks)

b) Discuss the application of enzyme in medicine (10 marks)

**QUESTION THREE (20 MARKS)**

a) Discuss the enzyme inhibitors (10 marks)

b) Derive michaelis menten equation (10 marks)

**QUESTION FOUR (20 MARKS)**

a) Discuss the enzyme classification proposed by IUB (12 marks)

b) Discuss the means of regulation of enzyme activity (8 marks)