



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2023/2024

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF BIOCHEMISTRY

### SHC 3250: BASIC METABOLISM II

DATE: APRIL 2024

TIME: 2 HOURS

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

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#### QUESTION ONE (30 MARKS)

- a) Explain the relationship between 7 dehydrocholesterol and vitamin D (4 marks)
- b) Illustrate the transamination of amino acids (3 marks)
- c) Explain how flow through the urea cycle is controlled within liver lobule (2 marks)
- d) Describe the role of tetrahydrofolate in biosynthetic reactions (2 marks)
- e) Describe how S-adenosylmethionine (SAM) cycles requires vitamin B<sub>12</sub> (3 marks)
- f) Write short notes on uptake transport and storage of folic acid (2 marks)
- g) Describe the synthesis of pyrimidines (2) (3 marks)
- h) Explain the kinetics physiological of insulin secretion (2 marks)
- i) Outline the function of heme (2 marks)
- j) Illustrate the structure of ferritin (2 marks)
- k) Explain how  $\beta$  – alanine may be used to synthesis carnosine (2 marks)

- 1) Describe the hypothetical mode of action of metformin (3 marks)

**QUESTION TWO (20 MARKS)**

- a) Discuss the nitrogen disposal and excretion (10 marks)  
b) Illustrate the synthesis of IMP 1 and 2 (10 marks)

**QUESTION THREE (20 MARKS)**

- a) Discuss the metabolic dysregulation of diabetes mellitus (10 marks)  
b) Discuss the disorder of theme degradation (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Describe cholesterol synthesis (10 marks)  
b) Discuss the degradation of pyrimidine (10 marks)