



TECHNICAL UNIVERSITY OF MOMBASA

School of Applied and Health Sciences
DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN BIOCHEMISTRY

ABC 4401: REGULATION AND INTEGRATION OF
METABOLISM

END OF SEMESTER EXAMINATION

SERIES: JULY 2025 SERIES

TIME: 2 HOURS

DATE: JULY 2025

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question One (30 Marks)

- (i) State four mechanisms through which metabolic pathways are controlled (4 Marks)
- (ii) Explain the uses of various ketone bodies in different body organs (3 Marks)
- (iii) Discuss the metabolic effects of glucagon hormones (6 Marks)
- (iv) With an example explain the concept of feedback inhibition in regulation of metabolic pathways (3 Marks)
- (v) State four characteristics of coarse metabolic control (4 Marks)

(vi) Name three metabolites that decrease in the absorptive stage of catabolism (3 Marks)

(vii) Give three differences between insulin and glucagon hormone (3 marks)

(viii) Briefly explain ketogenesis (4 Marks)

Question Two (20 Marks)

Discuss various factors that affect the rate of biochemical reaction (20 Marks)

Question Three (20 Marks)

(i) Discuss the effect of alcoholism in the metabolism of metabolites (15 Marks)

(ii) Discuss the metabolic effects of insulin hormones (5 marks)

Question Four (20 Marks)

(i) Discuss the role of hexokinase isozymes in regulation of glucose (14 Marks)

(ii) With examples explain the effect of starvation on metabolic pathways (6 Marks)

Question Five (20 Marks)

Discuss how regulation of glycolysis occurs (20 Marks)