



TECHNICAL UNIVERSITY OF MOMBASA

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

**UNIVERSITY EXAMINATION FOR:**

BACHELOR OF SCIENCE IN BIOCHEMISTRY

ABC 4307: BIOCHEMICAL ENDOCRINOLOGY

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.**

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**Question One (30 Marks)**

- (i) Explain the differences on how the endocrine and the nervous system communicate information to peripheral cells and tissues (4 marks)
- (ii) State any three metabolic process that are enhanced in response to increased T3 (3 Marks)
- (iii) Give the functions of any five pancreatic hormones (5 Marks)
- (iv) Give the meaning of the following terms

- Paracrine control (1 Mark)
- Autocrine control (1 Mark)
- (v) Explain the consequences of changes in insulin structure (4 Marks)
- (vi) Give four functions of glucagon-like peptides (4 Marks)
- (vii) List the four calcium regulating hormones (4 Marks)
- (viii) Differentiate between the two types of diabetes mellitus disorders (4 Marks)

### **Question Two (20 Marks)**

- (i) Discuss the functions of any six hormones of the anterior lobe of the pituitary glands (12 Marks)
- (ii) Describe the structure of the pancreas including components that make it both an exocrine and endocrine gland (8 Marks)

### **Question Three (20 Marks)**

- (i) Discuss the hypothalamic-pituitary-thyroid axis (12 Marks)
- (ii) Describe the production and structure of mature insulin (8 Marks)

### **Question Four (20 Marks)**

Discuss the following indicators of the thyroid disease goiter

- (i) Hypothyroidism (10 marks)
- (ii) Hyperthyroidism (10 Marks)

### **Question Five (20 Marks)**

- (i) Discuss the pathway involved in the synthesis of epinephrine in the adrenal medulla  
(12 Marks)
- (ii) Explain the functions of the eicosanoids found in various tissues of the human body  
(8 Marks)