



**TECHNICAL UNIVERSITY OF MOMBASA**

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**BACHELOR OF TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND**

**BIOTECHNOLOGY**

**ABT 4208: BASIC METABOLISM II**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date May 2016**

**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**

- (a) Outline the formation of mevalonate (3 marks)
- (b) Explain the phosphatidate biosynthesis from dihydroxyacetone-phosphate. (3 marks)
- (c) State the role of the following biomolecules: -
  - (i) Acetyl-CoA carboxylase
  - (ii) Lipoprotein lipase (2 marks)
- (d) Define the following terms:-
  - (i) Lipolysis
  - (ii) Ketogenesis (2 marks)
- (e) Outline factors that may lead to increased cholesterol level in plasma and its synthesis in the body. (4 marks)
- (f) Outline biosynthesis of phosphatidylcholine from phosphatidate. (4 marks)

- (g) Describe transport of lipids in the human body. (4 marks)
- (h) Name the products of complete hydrolysis of 1 mole of cephalin. (2 marks)
- (i) Account for the number of ATP released by complete oxidation of palmitic acid. (3 marks)
- (j) State the role of the following biomolecules in lipid metabolism:
- (i) Diacylglycerol
  - (ii) Acetyl-CoA
  - (iii) Insulin (3 marks)

### Question TWO

Describe the biosynthesis of fatty acids in the cytosol of animals. (20 marks)

### Question THREE

- (a) Outline the propionate pathway in ruminants (5 marks)
- (b) Discuss degradation of a fatty acid with even numbered carbon atoms. (15 marks)

### Question FOUR

Using structures, describe the process of ketone bodies biosynthesis and degradation (20 marks)

### Question FIVE

- (a) Describe cholesterol biosynthesis in animals. (13 marks)
- (b) Discuss the role of the liver in lipid metabolism. (7 marks)