



# Technical University of Mombasa

*Faculty of Applied and Health Sciences*

**DEPARTMENT OF PURE AND APPLIED SCIENCES**

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF  
TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND  
BIOTECHNOLOGY SECOND YEAR SECOND

**SBH 2300 : BASIC METABOLISM II**

SPECIAL / SUPPLEMENTARY EXAMINATION

October 2013 SERIES

2 HOURS

Instructions to candidates:

This paper consist of **FIVE** questions

Answer question **ONE** (compulsory) any other **TWO** questions

## **Question ONE**

- (a) (i) Name the key regulatory enzyme in fatty acid synthesis and explain its regulation (4marks)
- (ii) Account for the number of ATPs released by complete oxidation of arachichidonic acid (6marks)
- (b) (i) It is not possible to synthesize glucose from lipids during gluconeogenesis. Explain (2marks)
- (ii) State FOUR biomolecules synthesized from cholesterol (4marks)
- (iii) Outline biosynthesis of phosphatidic acid from dihydroxyacetone phosphate (6marks)

- (c) (i) Name the two enzymes that are important in the  $\beta$ -oxidation of unsaturated fatty acids. **(2marks)**
- (ii) Demonstrate the degradation of ketone bodies with the help of equations. **(8marks)**

### **Question TWO**

- (a) Outline catabolism of propionate and explain the genetic disorder that affects this metabolic pathway **(8marks)**
- (b) Describe the synthesis and utilization of ketone bodies **(12marks)**

### **Questions THREE**

In fatty acid catabolism describe:-

- (i) The activation and transportation from the cytosol to the mitochondrial matrix **(8marks)**
- (ii)  $\beta$ -oxidation **(8marks)**
- (iii) Regulation **(4marks)**

### **Question FOUR**

Discuss the formation regulation of 3, 3-dimethyl-acyl-pyrophosphate in the cytosol **(20marks)**

### **Question FIVE**

- (a) Outline the sources and uses of acetyl CoA **(10marks)**
- (b) Describe the digestion, absorption and transport of triacylglycerides **(10marks)**