PAPER II

TECHNICAL UNIVERSITY OF MOMBASA

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:APRIL2016

TIME:2HOURS

DATE: Pick DateMay2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

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

Do not write on the question paper.

Question ONE

1. (a) Describe the formation of malonyl-CoA (3 marks)

   (b) Outline the biosynthesis of phosphatidic acid from glycerol. (3 marks)

   (c) State the role of the following enzymes: -

   (i) Thiolase

   (ii) Hydroxymethyl-CoA (HMG-CoA) synthase (2 marks)

   (d) Define the following terms:-

   (i) Ketosis

   (ii) Lipogenesis (2 marks)

   (e) Outline FOUR functions of lipids (4 marks)

   (f) Outline biosynthesis of triacylglycerol from phosphatidate.

(4 marks)

(g) Name FOUR biomolecules synthesized from cholesterol.
(2 marks)

(h) Explain the sources of acetyl-CoA for fatty acid biosynthesis in the cytosol of animal cells.
(2 marks)

(i) Name the products of complete hydrolysis of one mole of lecithin.
(2 marks)

(j) Account for the number of ATP released by complete oxidation of stearic acid.
(3 marks)

(k) State the role of the following biomolecules in lipid metabolism:-

(i) High density lipoprotein (HDL)
(ii) CDP – Diacylglycerol
(iii) Propionyl-CoA
(3 marks)

Question TWO

Discuss fatty liver disease (20 marks)

Question THREE

Discuss degradation of a fatty acid with odd-numbered carbon atoms.
(20 marks)

Question FOUR

Describe the digestion, absorption and transport of triacylglycerols in the human body.
(20 marks)

Question FIVE

(a) Explain the differences between fatty acid biosynthesis and β-oxidation degradation pathways. (10 marks)

(b) Discuss the glyoxylate pathway.
(10 marks)