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

BIMBT 11 M

SBH 2300 : BASIC METABOLISM II

SPECIAL/SUPPLEMENTARY EXAMINATION

FEBRUARY 2013 SERIES 2 HOURS

Instructions to candidates:

This paper consist of FIVE questions
Answer question ONE (compulsory) and any other TWO questions

Question ONE

a) Outline the process of ketone bodies synthesis **(4marks)**

b) Describe translocation of fatty acids to their oxidation sites. **(4marks)**

c) (i) State THREE functions of cholesterol. **(3marks)**

(ii) Name the precursors used in cholesterol synthesis **(2marks)**

d) Describe glyoxylate cycle pathway highlighting how it relates to tricarboxyylic acid cycle. **(3marks)**

e) Outline the key reactions steps in the oxidation of a saturated fatty acid name the enzymes and cofactors. **(4marks)**

f) Outline the metabolism of propionate in ruminants **(3marks)**

g) Write the reaction equations catalysed by the following enzymes/ cofactors.

(i) HMG-CoA reductase. **(2marks)**

(ii) Acetyl-CoA carboxylase/Biotin. **(2marks)**

h) Compare lipolysis and lipogenesis interms of requirements, products and site of metabolism **(3marks)**

Question TWO

Discuss digestion, absorption and transport processes of lipids in the human body. **(20marks)**

Question THREE

The energy needed to sustain a seal under ice- habitat is obtained from stearic acid from adipose tissues. Describe its mobilization and complete β-oxidation indicating the enzymes involved, ATP produced and the overall reaction equation **(20marks)**

Question FOUR

Using clearly outlined illustrations, describe synthesis, elongation and desaturation of fatty acids. **(20marks)**

Question FIVE

a) State the importance of Triacyglycerol and phospholipids metabolism **(4marks)**

b) Describe the biosynthesis of triacylylycerol naming its precursors sources and outlining its pathway. **(16marks)**