



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
BTMBT 12S

ABT 4205: BASIC METABOLISM I

SUPPLEMENTARY /SPECIAL EXAMINATION

JULY 2014 SERIES

2 HOURS

Instructions to candidates:

This paper consists of **FIVE** questions

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

QUESTION ONE

a) Define the following terms:

- | | |
|-------------------------------|-----------|
| (i) Anabolism | (2 marks) |
| (ii) Glycolytic pathway | (2 marks) |
| (iii) Citric acid cycle | (2 marks) |
| (iv) Reducing end | (2 marks) |
| (v) Oxidative phosphorylation | (2 marks) |
| (vi) Oxonium ion | (2 marks) |

b) Describe the following Intermediate products of metabolism

- | | |
|---------------------------------|-----------|
| (i) Uridine diphosphate glucose | (2 marks) |
| (ii) Ribulose-5-phosphate | (2 marks) |
| (iii) Phosphoenol pyruvate | (2 marks) |
| (iv) Isocitrate | (2 marks) |

c) Give the role following enzymes

- (i) Active site α 1,6 glucosidase (2 marks)
- (ii) Glycogen phosphoglucoisomerase (2 marks)
- (iii) Citrate synthase (2 marks)
- (iv) Hexokinase (2 marks)
- (v) Ribulose 5 phosphate isomerase (2 marks)

QUESTION TWO

Discuss the enzymatic reaction in glycolysis process. (20 marks)

QUESTION THREE

Using illustrations discuss hexose monophosphate shunt in relation to

- (i) Oxidative phase (10 marks)
- (ii) Non oxidative phase (10 marks)

QUESTION FOUR

- a) Explain role of mitochondrion structure in electron transfer (10 marks)
- b) Describe oxidative phosphorylation (10 marks)

QUESTION FIVE

- a) Using illustrations explain fructose metabolism in
 - (i) Liver (10 marks)
 - (ii) Muscles (5 marks)
- b) Describe the diseases related to fructose metabolism (5 marks)