



**TECHNICAL UNIVERSITY OF MOMBASA**  
**Faculty of Applied & Health**  
**Sciences**

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR THE BACHELOR OF BIOTECHNOLOGY  
IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY  
(BIMBT 12J)

SBT 2272: MICROBIAL PHYSIOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: MARCH 2014**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- Answer Booklet

This paper consist of **FIVE** questions in **TWO** sections **A & B**

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

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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**SECTION A (COMPULSORY)**

**Question One**

a) Describe the following:

- |                                 |           |
|---------------------------------|-----------|
| (i) Anabolism                   | (3 marks) |
| (ii) Lithotrophs                | (3 marks) |
| (iii) Macromolecules            | (3 marks) |
| (iv) Non competitive inhibitors | (2 marks) |

b) Describe the following:

- |                               |           |
|-------------------------------|-----------|
| (i) Anaerobic respiration     | (4 marks) |
| (ii) Passive/simple diffusion | (4 marks) |
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(iii) Membrane transport system (3 marks)

- c) Explain the following
- (i) Reduction of potential (2 marks)
  - (ii) Naming of enzymes (2 marks)
  - (iii) Secondary metabolites (2 marks)

- d) Define the role of the following microbial nutrients:
- (i) Carbon (1 mark)
  - (ii) Phosphorous (1 mark)

**SECTION B (Answer any TWO questions from this section)**

**Question Two**

Discuss nutrient uptake under the following subheadings:

- (i) Characteristics (3 marks)
- (ii) Passive diffusion (4 marks)
- (iii) Facilitated diffusion (4 marks)
- (iv) Active transport (4 marks)
- (v) Iron uptake (3 marks)
- (vi) Group translocation (2 marks)

**Question Three**

Discuss microbial nutrition (20 marks)

**Question Four**

Discuss the role of microbial physiology in Biotechnology (20 marks)

**Question Five**

Discuss microbial enzyme in relation to:

- (i) Definition (3 marks)
- (ii) Characteristics (6 marks)
- (iii) Mechanism of action (3 marks)
- (iv) Factor influencing enzymatic activity (8 marks)