



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 APPLIED CHEMISTRY
BTAC13M

ACH 4401: FUNDAMENTALS OF BIOLOGY

SEMESTER EXAMINATION

DECEMBER 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) Explain the tenets of the cell theory **(5marks)**
- b) Describe **FOUR** differences between light and electron microscopes **(4marks)**
- c) Explain the functions of the following cell organelles **(4marks)**
- (i) Lysosomes
 - (ii) Golgi apparatus
 - (iii) Ribosomes
 - (iv) Mitochondria
- d) Describe **FOUR** types of channel membrane proteins **(4marks)**
- e) Explain **FOUR** differences between plant and animals cells **(4marks)**
- f) Explain **FIVE** factors required for the process of photosynthesis **(5marks)**

g) Describe the flow of energy in an ecosystem **(4marks)**

QUESTION TWO

Discuss adaptations of plants to the process of photosynthesis **(20marks)**

QUESTION THREE

a) With the aid of well illustrated diagrams, describe the process of meiotic cell division **(16marks)**

b) Explain FOUR differences between meiosis and mitosis **(4marks)**

QUESTION FOUR

Describe bulk transport of substances across biological membranes **(20marks)**

QUESTION FIVE

a) What is a community **(2marks)**

b) Discuss feeding relationships in a community **(18marks)**