



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MATHEMATICS & PHYSICS

UNIVERSITY EXAMINATION FOR:

BACHELORS OF TECHNOLOGY IN APPLIED PHYSICS

AAB 4240 : BIOLOGY FOR PHYSICISTS (MAIN)

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

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

Do not write on the question paper.

Question ONE

- a) Define the following terms; (6 marks)
- i) Facilitated Diffusion
 - ii) Capillary action
 - iii) Electron transport chain
 - iv) Skeletal muscle
 - v) Sodium-potassium exchange pump
 - vi) Phospholipids
- b)
- i) Describe the movement of an impulse between pre and postsynaptic junction (8 marks)
 - ii) Explain the movement and vessels used to carry blood from in and out of the lungs. (8 marks)
 - iii) Outline the steps involved in reverse osmosis for the water filtering process. (6 marks)

Question TWO

- a) Describe the visual system used by pit vipers and boids snakes. (6marks)
- b) List the applications of infrared vision. (4 marks)
- c) Compare the human eye and a camera. (10 marks)

Question THREE

- a) Describe the principle behind the pressure-retarded osmosis in osmotic power. (4 marks)
- b) Explain the interconnected processes in cellular respiration to convert chemical energy in glucose to ATP. (16 marks)

Question FOUR

- a) Describe the location, parts and function of the middle ear. (8 marks)
- b)
 - i) Name three types of skeleton (3 marks)
 - ii) List the role and diversity of the exoskeleton (9 marks)

Question FIVE

- a) Name two classes of proteins found in the biological membrane. (3 marks)
- b) List the functions of biological membranes. (17 marks)