THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Applied & Health Sciences

DEPARTMENT OF PURE AND APPLIED SCIENCES

DIPLOMA IN ANALYTICAL CHEMISTRY

END OF SEMESTER EXAMINATION

BIOLOGY I

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer booklet*

Answer question **ONE (COMPULSORY)** and choose any other **TWO** questions
Question **ONE** carries **30 MARKS** while the others carry **20 MARKS** each
This paper consist of **TWO** printed pages

QUESTION ONE (COMPULSORY) – 30 MARKS

a) Explain the information yield when a specimen is examined under an electron microscope. (4 marks)

b) State the function of the following organelles:

    (i)   Centrosomes (1 mark)

    (ii)   Golgi apparatus (1 mark)

    (iii)   Lysosome (1 mark)

    (iv)   Microvilli (1 mark)

c) Explain the process of facilitated diffusion across cell membrane (4 marks)

d) State the functions of Gap junction (4 marks)

e) Explain **FOUR** major modes of nutrition in Prokaryotes (4 marks)

f) Explain indirect active transport of molecules by antiport pumps (4 marks)

g) Sate inherited conditions which may be passed from one generation to the next

(4 marks)

h) List inherited ions-channel diseases (2 marks)

QUESTION TWO (20 MARKS)

a) Explain mitosis cell division (10 marks)

b) Explain the modern tenets of cell theory (10 marks)

QUESTION THREE (20 MARKS)

a) Explain how to focus the microscope (10 marks)

b) Describe the most recent version of the fluid mosaic model of membrane structure

(10 marks)

QUESTION FOUR (20 MARKS)

a) Explain how population of prokaryotes grow and adapt rapidly to their environment

(10 marks)

b) Explain how ligand-gated transmembrane channel facilitate diffusion of ions

(10 marks)

QUESTION FIVE (20 MARKS)

a) Blood group O child can also be born to parents who do not have the O allele if a recessive form of the for H antigen is also inherited from both parents;
Explain fully using genetic symbols (10 marks)

b) Explain how cells are joined by a variety of intracellular junctions (10 marks)