Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMMUNITY HEALTH

BSCH Y2 S1

AAB 4106 : HUMAN GENETICS

SUPPLEMENTARY/SPECIAL EXAMINATION

MARCH 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)	Single gene trait	**(1 mark)**
(ii)	Polygenic trait	**(1 mark)**
(iii)	Pleiotropy	**(1 mark)**
(iv)	Epistasis	**(1 mark)**

b) Explain the role of the following in human genetics

(i)	Multiple alleles	**(2 marks)**
(ii)	Cross over	**(2 marks)**
(iii)	Gene mutations	**(2 marks)**

c) (i) State and explain Mendel's second law of inheritance **(2 marks)**

  (ii) Explain the application of Mendel's Laws in society **(4 marks)**

d) Explain the concept of complementarily of nucleic acids **(4 marks)**

e) Explain the process of DNA repair by excision **(2 marks)**

f) Discuss briefly the application of the following in molecular pathology:

  (i)   Biological markers **(2 marks)**

  (ii)   Morphological markers **(2 marks)**

  (iii)   Molecular markers **(2 marks)**

g) Outline applications of biotechnology in development of human vaccines **(2 marks)**

QUESTION TWO

a) Discuss the chemical processes involved in induced mutations **(16 marks)**

b) Discuss any TWO type sof benefitial mutations **(4 marks)**

QUESTION THREE

a) Explain the process of gene expression **(10 marks)**

b) Discuss the process of gene regulation in Eukarryotes **(10 marks)**

QUESTION FOUR

a) Discuss the methods of gene transfer in animals **(10 marks)**

b) Discuss the application of gene therapy in management of

  (i)   Genetic disorders **(6 marks)**

  (ii)   Acquired diseases **(4 marks)**

QUESTION FIVE

Discuss the various chromosomal mutations found in humans **(20 marks)**