



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 INDUSTRIAL MICROBIOLOGY AND
BIOTECHNOLOGY
BIMBT 09A

SBT 2443 : GENETIC ENGINEERING II

SPECIAL/SUPPLEMENTARY EXAMINATION

FEBRUARY 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) Define the following terms;

- | | |
|---|----------|
| i) Genetic engineering | (2marks) |
| ii) Expressivity | (2marks) |
| iii) Expressivity | (2marks) |
| iv) Site –directed mutagenesis | (2marks) |
| v) Antibiotic | (2marks) |
| vi) Restriction fragment length polymorphism (RFLP) | (2marks) |

- b) Differentiate between forward and reverse genetics **(4marks)**
- c) (i) List any THREE requirements of a cloning vector **(3marks)**
(ii) Name TWO vector systems that have been used in HIV vaccine trials in Kenya **(2marks)**
- d) List any FOUR challenges of cloning eukaryotic genes **(4marks)**
- e) List THREE types of mutations that are induced by oligonucleotide – directed mutagenesis **(3marks)**
- f) Provide a scale of genetic variation among humans that forms the basis of DNA analyses for forensic application **(4marks)**

Question TWO

- a) Discuss cure of sickle cell disease by homologous recombination **(12marks)**
- b) Describe the principle of restriction fragment length polymorphism (RFLP) technique **(8marks)**

Question THREE

Highlight the complexities of inheritance pattern and outcomes which pose challenges to tracing of defects with reasonable certainty **(20marks)**

Question FOUR

- a) Discuss development of herbicide resistant plants **(6marks)**
- b) Discuss the ethical and social concern surrounding development of transgenic plants. **(14marks)**

Question FIVE

- a) Polymerase chain reaction (PCR) technology has impacted HIV/AIDS management. Explain **(10marks)**
- b) Discuss application of recombinant DNA technology in genome sequencing **(10marks)**