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

SBH 2415 : MICROBIAL GENETICS

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 terminologies

(i) Shine Dalgarno sequence

(ii) Episome

(iii) Transposition

(iv) Transversion

(v) Mutant **(5marks)**

b) Enlist the properties that make plasmids important cloning vectors **(5marks)**

c) Explain the role of DNA repair in supporting mutation **(5marks)**

d) Explain the merits associated with bacteriophage as a cloning vector **(5marks)**

e) Discuss plasmid replication among Gram negative bacteria **(5marks)**

f) Explain the possible forms of tyrosine that could result due to the degeneracy of the genetic code. **(5marks)**

Question TWO

a) Describe the biological significance of various types of plasmids **(10marks)**

b) Explain the contribution of plasmids in the conferment of resistance **(10marks)**

Question THREE

a) Explain the role of plasmids in pathogenicity and colonization of a host **(10marks)**

b) Discuss specialized transduction as a mechanism of genetic exchange **(10marks)**

Question FOUR

a) Explain how transformation aids DNA uptake during genetic exchange **(10marks)**

b) Discuss conjugation and its role in microbial evolution. **(10marks)**

Question FIVE

a) Discuss the structural arrangement of *E.Coli* chromosomal genetic map as a model prokaryote **(15marks)**

b) With examples, discuss chemical mutagens as agents of mutation induction. **(10marks)**