



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
SCIENCE IN BIOTECHNOLOGY
SBC 832: MOLECULAR POPULATION GENETICS

DATE: WEDNESDAY 10TH MAY 2017

TIME: 9.00 A.M. - 12.00 P.M.

INSTRUCTIONS

SECTION A: Answer all questions (5 marks each)

- 1) Describe the characteristics of single strand conformation polymorphism.
- 2) Give three examples of intercalating agents and explain how they cause mutation.
- 3) Outline the steps followed to fingerprint an alleged paternity using microsatellites.
- 4) Explain how genetic drift causes microevolution in a population.
- 5) Outline the importance of phylogenetic trees.
- 6) Explain the applications of single nucleotide polymorphism markers in population genetics.
- 7) Outline the relationship between paternity index (PI), combined paternity index (CPI) and relative chance of paternity (RCP).
- 8) Describe the characteristics of distance matrix methods for construction of phylogenetic trees.

SECTION B: Answer any *THREE* questions (20 marks each)

- 1) Discuss the characteristics, classification and methods for analysis of short tandem repeats (STR).
- 2) Discuss the different mechanisms for DNA repair.
- 3) Discuss the procedure and uses of site direct mutagenesis.
- 4) Discuss the advantage, disadvantage and applications of the following markers:
 - a) Restriction fragment length polymorphism (RFLP).
 - b) Random amplified polymorphic DNA (RAPD).