



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

SECOND YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE
IN IN POPULATION HEALTH

PPH 220: HUMAN POPULATION GENETICS

DATE: 19/12/2017

TIME: 2.00-4.00 PM

Instructions:

This paper consists of two sections A and B

Section A is compulsory

Section B choose any two (2) questions

SECTION A (30 MARKS) COMPULSORY**QUESTION ONE**

- a) With aid of a diagram explain how each DNA 4 bases combine to form base pairs (bp) (4 marks)
- b) Using illustration explain human inheritance (3 marks)
- c) Differentiate between mitosis and meiosis (3 marks)
- d) Define the following terms as used in population genetics (4 marks)
- i) Marker (locus)
 - ii) Haploid
 - iii) Gene
 - iv) Phenotype
- e) State main characteristics of homologous chromosome (3 marks)
- f) State three (3) ways in which genetic mutation may occur (3 marks)
- g) State the two (2) kinds of markers or locus which are currently used (4 marks)
- h) Using chromosome pair ABC in up part and aBc in lower part, state what genotype and haplotype you can identify (3 marks)
- i) Explain what recombination rate is (3 marks)

SECTION B ANSWER ANY TWO OF THE QUESTIONS BELOW

QUESTION TWO

In genetic inheritance, information is usually coded in DNA

- a) Differentiate between DNA, genes and chromosomes (5 marks)
- b) Describe processes used in decoding information in DNA (10 marks)
- c) Discuss complications that may occur during decoding of the information (5 marks)

QUESTION THREE

Using a table

- a) Illustrate genotype of blood type ABO locus (10 marks)
- b) Giving examples explain dominant, recessive, and co-dominant alleles in blood type
ABO Locus (10 marks)

QUESTION FOUR

Genetic disorders is a health issue which a population health officer need to address in a community set up

- a) Describe three ways that can be used to diagnose genetic disorders (15 marks)
- b) Discuss five ways of preventing genetic disorders (5 marks)

QUESTION FIVE

Many genetic disorders are known to occur among different people

- a) Describe three types of genetic disorders (12 marks)
- b) Discuss four ways of managing genetic disorders (8 marks)