COURSE CODE: BIO403
COURSE TITLE: POPULATION CYTOGENETICS
CREDIT: 2 Units
TIME ALLOWED: 2 Hours
INTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions

Q1 a. Mendelian genetics principles is essential in order to understand the genetic composition of
    populations, Justify?   3 marks
   b. Explain the principles of gel electrophoresis.   7.5 marks
   c. Enumerate the quantitative methods used in describing gene pool of a population.   2 marks
   d. Itemize the assumptions in which Hardy-Weinberg depends.   5 marks
   e. What is Darwanian fitness?   3 marks
   f. Determine the allelic frequency in AA-14, AB-40, BB-80, AC-20, BC-80 and CC-30, total: 264
                                                                                                  4.5 marks
Q2 a. State the Hardy-Weinberg law.   2 marks
    b. State the equation for the determination of frequencies of two allele at an X-linked locus. 4 marks
    c. Succinctly explain the three main different types of dominance relationship.   9 marks

Q3 a. State four advantages of allelic frequencies over genotypic frequencies.   6 marks
    b. Explain the methods of testing for Hardy-Weinberg proportion.   9 marks

Q4 a. Enumerate the procedure of calculating genotypic frequencies.   7 marks
    b. Suppose that a population of 90200 people were carrying the recessive allele 'a' for albinism,
     there are 67aa albino and 1860 Aa heterozygote carriers. Find the frequency of heterozygous. 8marks

Q5 a. Explain the major effects of gene flow on a population.   4 marks
    b. Imagine a population of 1500 diploid individuals with 653AA, 472Aa and 375aa individuals.
       Calculate the allelic frequency.   6 marks
    c. If the genotype formation of voles trapped in Abuja were 29MM, 96MJ and 28JJ individuals,
       determine their allelic frequency.   5 marks