

b. Describe how gel electrophoretic technique can be used to detect variant forms of a protein  
(11 marks)

4a. Why are carriers of sickle cell traits more immune to malaria parasites compared to the two homozygote genotypes?  
(4 marks)

b. A population of 1000 people living in a town in Nigeria was tested for their genotype at the phenylketonuria gene locus using gel electrophoresis. The trait was observed to be controlled by two alleles S and K. The result gave 660 SS, 200 SK and 140 KK. Calculate:

- the genotypic frequencies in the population
- the allelic frequencies in the population

(7 marks)

(4 marks)

5a. Outline five factors that can change gene frequencies.  
(5 marks)

b. If  $A^1A^1$  produces an average of 10 offspring,  $A^1A^2$  produces an average of 6 offspring and  $A^2A^2$  produces an average of 4 offspring.

i. Which of the three genotypes will have the highest reproductive output? (1 mark)

ii. Determine the fitness of each of the three genotypes

(5 marks)

iii. Calculate the selection coefficients of each genotype.

(4 marks)

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Faculty of Education  
2023\_2 EXAMINATIONS\_

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**Programme:** M.Ed Guidance and Counselling

**Course Code:** EGC815

**Course Title:** Sex and Family Life

**Time Allowed:** 2 Hours

**Instruction:** Answer Question 1 and any other two questions.

- 1a. Describe the Human Sexual Response Cycle
  - b. Describe Three (3) Abnormal sexual behaviours
  - c. Discuss the stages of Premarital Counselling (30 marks)
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- 2a. What are the Goals of Family counselling
  - b. Discuss the process of family counselling (20 marks)
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- 3a. List and Explain five indicators that children need counselling
  - b. What preparations do you need to make as a counsellor before counselling children? (20 marks)
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4. Discuss Five Sexually Transmitted Diseases (STDs) and how they can be treated (20 marks)