NATIONAL OPEN UNIVERSITY 0F NIGERIA
UNIVERSITY VILLAGE, NNAMDI AZIKIWE EXPRESS WAY, JABI, ABUJA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF PUBLIC HEALTH
2024 1 EXAMINATION

PROGRAMME: MSc. PUBLIC HEALTH
COURSE CODE: PHS813
COURSE TITLE – BIOSTATISTICS AND APPLICATIONS
CREDIT UNITS: 3 CREDITS
TIME ALLOWED: 3 HOURS
ATTEMPT ALL QUESTIONS
SCORE = 70 MARKS

1i. State the difference between target population and source population? (5 marks)
ii. How is a sample different from a census? (4 marks)
iii. Provide an example of a statistic and a parameter? (5 marks)
iv. Define the concept of variable and provide examples of variables in a population or sample. (5 marks)

2a. Explain the concept of Analysis of Variance (ANOVA) and its purpose in statistical analysis. Discuss how ANOVA helps in testing the equality of means for multiple samples simultaneously. (5 marks)

b. What are the assumptions that need to be satisfied for ANOVA to be valid? Explain the significance of statistical independence, normal distribution, and equal variance in relation to ANOVA. (4 marks)

c. Describe the formulation of the one-way ANOVA and its key components. Discuss the role of the independent variable (treatment) and the dependent variable (response) in the context of one-way ANOVA. (4 marks)

3a. Explain chi-square tests for categorical data and their relevance for skewed distributions. Discuss the importance of the chi-square distribution in these tests. (6 marks)

b. Describe the purpose and methodology of the chi-square test of goodness of fit in assessing observed and expected frequencies. (6 marks)

c. Explain how the degrees of freedom are determined in the chi-squared test of goodness of fit. Discuss why the degrees of freedom are typically (k-1) when there is one row or column with k distinct groups. (6 marks)

4. Briefly describe the following concepts.
i. Null hypothesis