



NATIONAL OPEN UNIVERSITY OF NIGERIA  
FACULTY OF SOCIAL SCIENCES  
DEPARTMENT OF ECONOMICS  
2024 1 EXAMINATION

COURSE TITLE: APPLIED STATISTICS

COURSE CODE: ECO 452

UNITS: 2

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS  
QUESTION ONE CARRIES 30 MARKS WHILE OTHER QUESTIONS CARRY 20 MARKS EACH

- 1a. Describe a random error term (5 marks)  
b. What are the assumptions of multiple regression? (5 marks)  
c. Describe in detail the assumptions of a normal distribution (5 marks)  
d. The table below shows the samples taken involving two (2) interactive factors A & B in a two analysis of variance experience gives the result below:

	Treatment A			
Block B	22	11	10	5
	13	10	8	6
	7	9	6	2

Estimate a 2-way analysis of variance at 5% level of significance? (15 marks)

2. Given that family incomes are normally distributed with  $\mu = ₦14,000$  and  $\delta = ₦4000$ . What is the probability that a family picked at random will have:  
(a) Between ₦13,000 and ₦16,000 and Below ₦13,000  
(b) Above ₦16,000 and Above ₦18,000? (20 marks)

3. A population consists of four members 3, 7, 11, 15. Consider all possible samples of size of two that can be drawn without replacement from this population. Find  
(i) Population mean  
(ii) The population standard deviation  
(iii) The mean of the sampling distribution of means  
(iv) The standard deviation of the sampling distribution of means. (20 marks)

4. Discuss the following:

- (i) Sampling distribution of difference of two means  
(ii) Sampling distribution of sum of two means  
(iii) Probability Distribution of a Random Variable  
(iv) Poisson Distribution  
(v) Probability Distribution of a Continuous Variable

(20 marks)

5a. Discuss the following components of time series

- (i) One-way factor analysis of variance  
(ii) Two-way factor analysis of variance

b. Estimate the Laspeyre, Paasche and Fisher's price index numbers for 2022 using 2020 as base year.

Commodity	Quantities		Prices	
	2020	2022	2020	2022