



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

COURSE TITLE: APPLIED QUANTITATIVE ANALYSIS
COURSE CODE: ECO 729
CREDIT UNITS: 2 UNITS
TIME ALLOWED: 2 HOURS
INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO (2) QUESTIONS

QUESTION ONE

- 1a.** Define a probability distribution and discuss the factors that determine where a possible value is likely to be plotted on the probability distribution. Give examples of types of probability distributions and their applications. (6 marks)
- 1b.** Differentiate between discrete and continuous probability distributions and describe how a continuous probability distribution differs from a discrete one. What is a probability density function and what are its properties? (4 marks)
- 1c.** Two balls are drawn at random in succession without replacement from an URN containing 4 red balls and 6 black balls. Find the probabilities of all the possible outcomes. Find the probabilities of all the possible outcomes. (20 marks)

QUESTION TWO

- 2a.** Define Linear Programming and state its main purpose. (2 marks)
Explain the concept of the objective function in linear programming. Give an example. (2 marks)
- 2b.** Discuss the role of constraints in linear programming and provide an example. (2 marks)
Enumerate and briefly explain four properties of a linear program. (2 marks)
- 2c.**
- i. Define the Simplex Method and describe its purpose in solving linear programming problems. (2 marks)
 - ii. Discuss the initial procedure for applying the Simplex Method. (2 marks)
 - iii. Explain the conditions that need to be met before the Simplex Method can be applied. (2 marks)
 - iv. Outline and briefly describe the seven steps involved in the Simplex Method. (6 marks)

QUESTION THREE

- a) Discuss the differences and applications of qualitative and quantitative forecasting methods. Mention two subtypes of quantitative methods and provide an example of each. (3 marks)
- b) Explain the Trend Projection method of forecasting. How does it use statistical calculations in predicting future trends? (4 marks)
- c) Define the term 'inventory' in the context of a business firm and explain the relevance of three concepts associated with inventory control theories. (3 marks)
- d)

Star Logistics Ltd has established that the annual quantity for a given item is 4000 units. The cost of placing an order is ₦5000 and the price per unit is ₦ 2000. Inventory holding cost percentage is 20% of the purchase cost.

Required:

- i. Formulate the best (optimal) entry policy for this item i.e. - Quantity to order (EOQ) (2.5marks)
- ii. Frequency for ordering and when to order (2.5marks)
- iii. Re-order level/point; For ROP take lead-time is 15 days while one year has 300 working days (2.5marks)
- iv. Total cost associated with the policy. (2.5marks)

QUESTION FOUR

- 4a) Explain what Statistical Software are and the role they play in data analysis. (6 marks)
- 4b) Describe the features and uses of four Statistical Software packages mentioned in the provided content. (8 marks)
- 4c) Discuss the role of Microsoft Excel in statistical data analysis and its benefits. (6 marks)