



NATIONAL OPEN UNIVERSITY OF NIGERIA
91, CADASTRAL ZONE, NNAMDI AZIKWE EXPRESS WAY, JABI – ABUJA
FACULTY OF MANAGEMENT SCIENCES
2023_2 EXAMINATIONS

COURSE CODE: BUS 800 **CREDIT UNIT: 2**

COURSE TITLE: Quantitative Analysis

TIME ALLOWED: 2Hrs

INSTRUCTION:

- 1. Attempt question number one (1) and any other (2) questions.**
- 2. Question number 1 carries 30 marks, while the other two (2) questions carry 20 marks each.**
- 3. Present all your points in coherent and orderly manner.**

1a. Which sets are finite and infinite?

i. The months of the year

ii. {1, 2, 3, 99, 100}

iii. The people living on the earth

iv. {x | x is even}

v. {1, 2, 3,.....}

1b. Suppose, the probability of an assembly line failing is 0.05 and the probability of a raw material shortage is 0.1.

If these two events are independent of each other, then what are the probability of an assembly line failing and a raw material shortage.

1c. A distributor stocks heavy (2B), medium (HB), fine (2H) and extra fine (3H) pencils which come in packs of 10. Currently in stock are 2 packs of 3H, 14 packs of 2H, 35 packs of HB and 8 packs of 2B. If a pack of pencil is chosen at random for inspection, what is the probability that they are:

(a) medium (b) heavy (c) not very fine (d) neither heavy nor medium?

2a. An ordinary six-sided die is to be rolled, the equally likely outcome set, U, is {1,2,3,4,5,6} and the event 'even number' has event set {2,4,6}. Calculate the theoretical probability of obtaining an even number easily.

2b. State, with simple examples, the four laws of probability.

2c. A display of 15 T-shirts in a Sports shop contains three different sizes: small, medium and large. Out of the 15 T-shirts:

3 are small

6 are medium

6 are large.

If two T-shirts are randomly selected from the T-shirts, what is the probability of selecting both a small T-shirt and a large T-shirt, the first not being replaced before the second is selected?

3a. Discuss the following terms

i. Joint Probability Table

ii. Marginal Probabilities

iii. Conditional Probability

iv. Bayes theorem

v. Mutually exclusive events

4a. Let $A = \{1,2,3,4\}$, $B = \{2,4,6,8\}$ and $C = \{3,4,5,6\}$ be the set.

Find i. $(A \cup B) \cap C$, ii. $A \cup (B \cap C)$.

4b. Explain the theoretical probability with examples.