

LAIKIPIA



UNIVERSITY

# UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

SECOND YEAR EXAMINATION FOR THE DEGREE  
OF BACHELOR OF COMMERCE

**BCOM 216: BUSINESS STATISTICS I**

***STREAM: R***

***TIME: 2 HRS***

***DAY: FRIDAY [8.30 A.M-10.30 A.M]***

***DATE: 30/01/2026***

**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

**PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.**

**INSTRUCTIONS:** Answer **QUESTION ONE** and any **OTHER TWO** questions

**QUESTION ONE**

a) Distinguish between;-

i) A census and Sample survey (2 marks)

ii) Probability and Non-probability sampling methods (2 marks)

iii) Sample and population (2marks)

b) From the following data, compute the required measures of central tendency.

|                        |    |    |    |    |    |    |    |    |
|------------------------|----|----|----|----|----|----|----|----|
| Value                  | 12 | 14 | 25 | 34 | 56 | 65 | 36 | 79 |
| Number of observations | 2  | 5  | 8  | 12 | 14 | 11 | 10 | 5  |

i) Arithmetic mean (2marks)

ii) Geometric mean (3marks)

iii) Harmonic mean (3marks)

c) The data below is for the student's marks scored in a test.

|                    |         |         |         |         |         |         |
|--------------------|---------|---------|---------|---------|---------|---------|
| Marks              | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 |
| Number of students | 4       | 7       | 16      | 20      | 15      | 8       |

i) Prepare an Ogive for the above data (6marks)

ii) Use the ogive in (i) above to determine the median (3 marks)

iii) Determine the upper and lower quartiles (1 mark)

iv) Calculate the interquartile range (3 marks)

d) Explain any Three properties of Poisson probability distribution (3 marks)

**QUESTION TWO**

(a) If 5% of the items produced turn out to be defective, then find out the probability that out of 6 items selected at random there are:

i) Exactly three defective **(3 marks)**

ii) At least two defective **(3 marks)**

iii) Exactly four defective **(3 marks)**

iv) At most five defective **(3 marks)**

(b) A manufacturing firm produces 60000 units of nuts. The probability of having a defective nut is 0.25. Calculate;

i) The expected number of defective nuts **(3 marks)**

ii) The variance **(3 marks)**

iii) The standard deviation **(2 marks)**

**QUESTION THREE**

a) In a distribution exactly normal, 7% of the items are under 35 and 89% are under 63. What is the mean and standard deviation of the distribution? **(9 Marks)**

b) (i) Calculate Spearman's Rank correlation coefficient between marks assigned to ten students by Judges X and Y in a certain competitive test as shown below. **(9 marks)**

| Student             | A  | B  | C  | D  | E  | F  | G  | H  | J  | K  |
|---------------------|----|----|----|----|----|----|----|----|----|----|
| Marks by judge Ali  | 52 | 53 | 42 | 60 | 45 | 41 | 37 | 38 | 25 | 27 |
| Marks by judge Musa | 65 | 68 | 43 | 38 | 77 | 48 | 35 | 30 | 25 | 50 |

(ii) Interpret your answer in (i) above **(2 marks)**

**QUESTION FOUR**

The average trade in value of a certain make of used cars depreciates with time. A financial adviser valued 8 such cars and came up with the following data.

| Age of car (Years) | 2   | 2.5 | 3   | 3.5 | 4.5 | 5   | 6   | 7   |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Value Ksh (000)    | 610 | 555 | 509 | 465 | 389 | 351 | 331 | 250 |

- i) If a ninth car was available, aged 48 months, what would the financial adviser find to be its value? **(12 marks)**
- ii) Determine the Covariance of the above data **(3 Marks)**
- iii) Distinguish between correlation and regression **(5 marks)**

### QUESTION FIVE

A manufacturing company wants to determine which of two brands of industrial batteries—Brand A and Brand B—has a longer average operating life before replacement. The company tests several batteries of each brand and obtains the following results:

|                         | Number of batteries |         |
|-------------------------|---------------------|---------|
| Battery life (in hours) | Brand A             | Brand B |
| 100–200                 | 3                   | 5       |
| 200–300                 | 12                  | 20      |
| 300–400                 | 25                  | 40      |
| 400–500                 | 8                   | 6       |
| 500–600                 | 2                   | 3       |

#### Required:

- a) Calculate which brand of batteries has the greater average operating life **(6 Marks)**
- b) As a member of the company's management board, use coefficient of variations to recommend which brand should be adopted for production use **(14 marks).**