LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2025/2026 ACADEMIC YEAR

EXAMINATION FOR THE MASTERS DEGREE IN EDUCATION

EPSC 811/EAPE 801: STATISTICAL METHODS IN SOCIAL SCIENCE

STREAM: R ***TIME:3 HRS***

DAY: TUESDAY (12.30AM-3.30PM) ***DATE:03/02/2026***

THIS QUESTION PAPER CONSISTS OF THREE (3 PAGES)

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INSTRUCTIONS:

1. Answer ANY THREE (4) questions.
2. Show all statistical workings clearly.
3. All questions carry 20 marks.

QUESTION ONE (20 MARKS)

a) Explain the importance of descriptive statistics in educational and psychological research. **(5 marks)**

b) Using a hypothetical class performance dataset, illustrate how mean, median and mode may give different impressions of learner achievement. **(15 marks)**

QUESTION TWO (20 MARKS)

A lecturer administered a statistics test to two groups and obtained the following summary data:

- Group A: n = 40, $\bar{x}$ = 55, SD = 10
- Group B: n = 30, $\bar{x}$ = 60, SD = 12

a) Compute the combined mean for the two groups. **(5 marks)**

b) Discuss the usefulness of the combined mean in evaluation studies. **(5 marks)**

c) Compute the coefficient of variation for each group and interpret the results. **(10 marks)**

QUESTION THREE (20 MARKS)

a) State one advantage and one limitation of parametric tests. **(2 marks)**

b) Describe FOUR situations in which non-parametric methods are preferred in educational research. **(8 marks)**

c) Distinguish between parametric and non-parametric statistical tests, giving at least two examples of each. **(10 marks)**

QUESTION FOUR (20 MARKS)

A researcher correlates students' study hours and their scores and gets a Pearson correlation coefficient of r = 0.72.

a) Interpret this correlation coefficient. **(4 marks)**

b) Compute r^2 and explain what it means in this context. **(10 marks)**

c) Discuss three assumptions of Pearson's product–moment correlation. **(6 marks)**

QUESTION FIVE (20 MARKS)

a) Describe the steps involved in hypothesis testing using the t-test for independent samples. **(8 marks)**

b) A principal wants to determine if male and female students differ significantly in mathematics performance. State:

i. The appropriate statistical test **(2 marks)**

ii. The null and alternative hypotheses **(2 marks)**

iii. TWO limitations of using the t-test in this context **(2 marks)**

iv. TWO ethical considerations when reporting the results **(2 marks)**

c) Explain why ANOVA is preferred over multiple t-tests when comparing three or more groups. **(4 marks)**

QUESTION SIX (20 MARKS)

The following scores represent anxiety levels of students measured using a standard scale:

12, 18, 20, 24, 30, 35, 35, 40, 42, 45

a) Compute the range, median, and interquartile range (IQR). **(8 marks)**

b) Interpret your results in the context of psychological research. **(8 marks)**

c) Explain one reason why researchers prefer IQR over the range. **(4 marks)**