



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF EDUCATION, GOVERNANCE, THEOLOGY AND LEADERSHIP

DEPARTMENT OF CURRICULUM AND EDUCATIONAL PHILOSOPHY

EXAMINATION PAPER

MODULE CODE : EPD 124 / EPR 124
MODULE TITLE : RESEARCH METHODS AND STATISTICS
DURATION : 3 Hours
LEVEL : 1.2
DATE : 10 JUN 2025

INSTRUCTIONS TO CANDIDATES:

1. Answer three (3) questions, at least one question from each section.
2. Each question carries (100) marks.
3. Number of marks for part questions are shown in brackets.
4. Start each question on a new page.
5. This paper consists of five (5) pages

SECTION A: RESEARCH METHODS



1. Discuss the importance of research to education. (100)
2. Evaluate the utility of philosophical foundations in educational research. (100)
3. Justify the use of the thematic content analysis technique in qualitative research (100)

SECTION B: STATISTICS

4. (a) Define the following terms
 - i. Frequency (3)
 - ii. Variance (3)
 - iii. Mean (3)
 - iv. Standard deviation (3)
- b. Given 6, 7, 4, 8, and 11, calculate the
 - i. mean (5)
 - ii. Standard deviation (5)
 - iii. Variance (5)
- c. Two numbers x and y are added to the set of five numbers above such that the mean is increased by 1 and the variance is increased by 2. Find a and b . (10).
- d. The table shows seconds taken by ten athletes in a 400m race recorded for two days.

Table 1.

Athlete	Day 1	Day 2
A	50	45
B	45	45
C	53	54
D	52	51
E	49	49
F	47	49
G	49	43



H	50	50
I	60	50
J	49	49

- I. Which athlete was the most improved one on the two days? (3)
- II. Calculate the exclusive range of seconds taken in day 2. (5)
- III. Find the mean seconds for the first day. (5)
- IV. Compute the median for day 1. (3)
- V. In which day did the athletes perform better? Justify your answer (15)
- VI. Calculate the mode for day 2. (3)
- VII. Find the standard deviation for the first day (20)

e. Denis wrote 5 tests and got a standard deviation of 0. What does this mean about Denis's performance in the 5 tests? (4)

f. What is an outlier in a distribution of numbers? (3)

5. a. List any three measures of dispersion. (6)

b. In what situations are the following statistical measures used

i. Pearson's Product Moment Correlation Coefficient? (4)

ii. Spearman's rank order (rho)? (4)

c. Complete the table below about Pearson's Product Moment Correlation Coefficient

Table 2

Coefficient	Strength of the coefficient
0.45	
-1	
0.8	
+1	
0.19	

(10)

d. Distinguish between

i. Measures of central tendency and measures of variability. (4)

ii. Non-probability sampling and probability sampling. (4)

iii. Independent variable and dependent variable. (4)

e. The table below shows marks obtained by 10 students in Accounting and Biology tests.



Table 3

Student	A	B	C	D	E	F	G	H	I	J
Accounting	80	78	76	56	90	48	66	75	83	73
Biology	76	69	72	61	72	52	66	69	87	72

- I. Calculate the mean for the biology marks. (5)
 - II. Find the modal mark for biology. (4)
 - III. Calculate the range of marks for Accounting. (5)
 - IV. Compute the median mark for Accounting (5)
 - V. Using the data from table 3, calculate the Pearson Product Moment Correlation Coefficient (40)
 - VI. Comment on the strength of the relation of the correlation coefficient (5)
- 6 a When is a z-score computed in statistics? (5)
- b. What are the advantages of the following statistical measures?
- i. mean (4)
 - ii. median (4)
 - iii. mode (4)
- c. What are the weaknesses of the following statistical measures?
- i. mode (4)
 - ii. mean (4)
 - iv. median (4)

d. The table below shows marks obtained by 10 students in TTD and BTM tests.

Table 4

Student	A	B	C	D	E	F	G	H	I	J
TTD	60	72	87	60	88	70	72	77	93	88
BTM	70	79	77	75	69	79	68	79	60	77

- I. Calculate the mean for the TTD marks (5)
- II. Compute the z-score for student H in BTM (15)
- III. Find the inclusive range of the TTD marks (6)
- IV. Calculate the variance of the BTM marks (15)



- V. Use the data on table 4 to calculate the Spearman's rank order correlation coefficient. (25)
- VI. Comment on the strength of correlation coefficient (5)

THE END

EPR 101 LIST OF FORMULA

Arithmetic Mean

$$\bar{x} = \frac{\sum x}{n}$$

Mean Deviation

$$MD = \frac{\sum (x - \bar{x})}{n}$$

Variance

$$s^2 = \frac{\sum (x - \bar{x})^2}{n}$$

Standard Deviation

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Z Score

$$Z = \frac{x - \bar{x}}{s}$$

Spearman Rank Order Correlation Coefficient (rho)

$$\rho = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Pearson's Product Moment Correlation Coefficient, (r)

$$r = \frac{\sum (xy) - \frac{(\sum x)(\sum y)}{n}}{\sqrt{\left[\sum (x^2) - \frac{(\sum x)^2}{n} \right] \left[\sum (y^2) - \frac{(\sum y)^2}{n} \right]}}$$

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