



**ZIMBABWE EZEKIEL GUTI UNIVERSITY**

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**FACULTY OF EDUCATION GOVERNANCE, THEOLOGY AND  
LEADERSHIP**

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**DEPARTMENT OF CURRICULUM AND EDUCATIONAL PHILOSOPHY**

**EXAMINATION PAPER**

**MODULE CODE** : EPD124  
**MODULE TITLE** : RESEARCH METHODS AND STATISTICS  
**SPECIAL REQUIREMENTS** : CALCULATOR AND FORMULA SHEET  
**DURATION** : 3 HOURS  
**LEVEL** : 1.2  
**DATE** : 13 JUN 2024

**INSTRUCTIONS TO CANDIDATES:**

1. Answer any **THREE** questions only, **but do not answer more than two questions from one section.**
2. Each question carries 100 marks.
3. Show all working.
4. Start each answer on a new page of your answer booklet.
5. This paper consists of five (5) pages.



## SECTION A: RESEARCH METHODS

1. Discuss how you would employ any two non-probability sampling techniques to a research study of your choice. [100]
2. Assess the claim that funding is the main factor which influences the researcher's choice of a research topic. [100]
3. Examine the role of research in education. [100]

## SECTION B: STATISTICS

### Question 4

- a. Define the concept of hypothesis [3]
- b. Distinguish between the True Experimental Design and Ex Post Facto design. [4]
- c. State any **two** measures of dispersion. [4]
- d. State any **two** characteristics of probability sampling techniques. [4]
- e. **Table 1** shows the scores for a round of golf for 18 club members.

**Table 1**

<b>Score</b>	<b>66</b>	<b>67</b>	<b>68</b>	<b>69</b>	<b>70</b>	<b>71</b>	<b>72</b>	<b>73</b>
<b>Frequency</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>

- i. Find the mean of the scores. [4]
  - ii. Find the median of the scores. [4]
  - iii. Find the mode of the scores. [2]
  - iv. Compute the inclusive range of the scores. [2]
- f. **Table 2** shows the marks obtained by 10 students in two tests.

<b>Student</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
<b>Test 1</b>	<b>80</b>	<b>48</b>	<b>60</b>	<b>47</b>	<b>73</b>	<b>91</b>	<b>40</b>	<b>62</b>	<b>52</b>	<b>58</b>
<b>Test 2</b>	<b>52</b>	<b>76</b>	<b>60</b>	<b>75</b>	<b>45</b>	<b>45</b>	<b>77</b>	<b>63</b>	<b>79</b>	<b>61</b>

- i. Compute the variance of Test 1 scores. [10]



- ii. Compute the standard deviation of Test 2 scores. [12]
- iii. Find the z score of Student D's Test 1 score. [6]
- iv. Compute the Spearman Rank Order Correlation Coefficient of the distribution. [40]
- v. Comment on the strength of the correlation coefficient. [5]

### Question 5

- a. A researcher wanted to establish if there was any significant difference in performance in the performance of 10 students in English and Shona. She presented the results as shown in **Table 1**.

**Table 1**

Student	A	B	C	D	E	F	G	H	I	J
English	60	58	70	32	40	57	65	30	70	62
Shona	72	65	80	56	40	70	70	54	75	70

- i. Calculate the mean of English scores. [3]
- ii. What is the modal score of the Shona scores? [2]
- iii. What is the median of the English scores. [3]
- iv. Calculate the variance of the English scores. [10]
- v. Compute the standard deviation of the English scores. [6]
- vi. Given that the standard deviation of Shona scores is 11.9, in which subject did student D perform better and why? [6]



b. Ten students wrote two tests and obtained the following marks:

Student	A	B	C	D	E	F	G	H	I	J
Test 1	25	38	35	30	20	30	40	25	35	25
Test 2	30	46	50	48	26	36	40	31	40	32

- i. Compute Pearson's Product Moment Correction Coefficient of the distribution and comment on its strength. [35]
- ii. Compute Spearman Rank Order Correlation Coefficient of the distribution and comment on its strength. [35]

### Question 6

- a. Distinguish between:
  - i. control group and experimental group. [3]
  - ii. ratio scale and interval scale. [3]
  - iii. random sampling and systematic random sampling. [3]
  - iv. deductive approach and inductive approach. [3]
- b. What is the strength of a correlation coefficient of 1.0 [3]
- c. State the strength of a correlation coefficient of -0.67 [3]
- d. State any **three** characteristics of a normal distribution curve. [3]
- e. State any **two** strengths of the mean. [2]
- f. Explain the term Hawthorne Effect. [5]



- g. **Table 1** shows the marks, class averages and standard deviations for one student in four subject areas.

**Table 1**

Subject	Mark	Class mean	Standard deviation
English	65	55	10
Shona	70	54	12
Maths	60	44	8
Science	75	85	10

Using appropriate statistical techniques show in which subject the student's performance was

- i. Best [6]
- ii. Worst [6]

- h. **Table 2** shows the performance of 10 learners in Accounting and Economics.

Learner	A	B	C	D	E	F	G	H	I	J
Accounting	57	78	84	52	92	62	50	73	76	55
Economics	56	73	88	55	80	66	53	75	79	58

- i. Find the standard deviation of the Accounting scores. [12]
- ii. Compute the z score for Learner A's Accounting score. [3]
- iii. Compute the Pearson Product Moment Correlation Coefficient of the distribution. [40]
- iv. Comment on the strength of the correlation coefficient. [5]

**THE END**

## EPR101 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)

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