BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

PROGRAMME: BACHELOR OF SCIENCE EDUCATION HONOURS DEGREE

COURSE CODE: PC102 (02). NARRATION: RESEARCH METHODS AND STATISTICS

DURATION: 3 HOURS TOTAL MARKS: 300

INSTRUCTIONS

JAN 2025

- Answer any three questions.
- Each question carries 100 marks except for the statistic question which carries 50 marks which will be converted to a percentage.
- Begin each answer on a separate answer sheet, relate your answers and examples to your subject of specialization in Zimbabwean context.

SECTION A: RESEARCH METHODS

Choose **TWO** questions from this section.

1. Explain the importance of sampling and show how you would use any one probability sampling technique to get a sample from a given population. [100]
2. Discuss the role of computers in educational research. [100]
3. Examine the importance of the research proposal in educational research, clearly articulating the essential components. [100]

SECTION B: RESEARCH STATISTICS

Choose **ONE** question from this section.

4. An experiment was carried out to compare the effectiveness of two methods of teaching Mathematics at a certain high school. A sample was randomly selected and the selected pupils were randomly assigned to either a control group or an experimental group. The performance of the experimental group and that of the control group were compared at the end of the experiment, it found that the mean score of the experimental group was 72% while that of the control group was 68%.

    a. For this experiment state
        i. The independent variable [2]
        ii. Dependent variable. [2]
        iii. Any two possible confounding variable [4]
        iv. The null hypothesis [2]
        v. A directional hypothesis. Explain your answer. [4]
        vi. The test that would need to be calculated to determine if the difference between 72% and 68% is significantly different. Explain your answer. [4]

b. Differentiate

i. The experimental group and control group [4]

ii. Random selection and random assignment [4]

iii. Briefly explain the exact experiment that was done in the scenario described above. [4]

c. Random selection can use simple random sampling using number. The following is part of hundreds of random numbers.

Table 1: Random numbers

	Column	Column	Column	Column
Row 1	36768	72633	37948	20069
Row 2	07092	52392	42627	12067
Row 3	43310	01081	44863	80307

From a population of 3000 people, a researcher wants to select 200 people into her sample starting from Row 1 across columns i.e., from column 4 and then starting from Row 2 across columns until you get to Row 3 column 4, explain and identify the participants that would be chosen. [20]

5. A researcher wants to determine the relationship between test anxiety and the student's performance. The Table 2 below shows the scores on a measure of test anxiety and examination score for a sample of 10 students.

Table 2: Scores of test anxiety and examination score

Student	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Test anxiety score	23	14	14	5	17	20	20	15	21	15
Test score	43	59	48	77	50	52	46	51	51	41

a. Calculate

i. modal test anxiety score [1]

ii. median anxiety score [2]

b. Which variable is being investigated? [1]

c. State the dependent variable [1]

d. For this data, calculate the spearman rank order correlation coefficient and use it to comment on the relationship between test anxiety and examination score. [25]

e. If the low test anxiety is pegged at 0.2 standard deviations below the mean, which student, if any, have low test anxiety? [10]

f. If the high test anxiety is pegged at 1.6 standard deviations above the mean, which students, if any, have very high test anxiety? [10]

END OF PAPER