



UNIVERSITY OF GHANA

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DEPARTMENT OF TEACHER EDUCATION
SCHOOL OF EDUCATION AND LEADERSHIP
COLLEGES OF EDUCATIONEND OF SEMESTER TWO EXAMINATIONS FOR LEVEL 400, 2023/2024
B.ED. PROGRAMMECOURSE CODE: TEJS 446
COURSE TITLE: TEACHING, LEARNING, AND APPLYING COLLECTING AND
HANDLING OF DATA*Instruction:* Answer all questions in Section A and any three questions in Section B.
Time: 2 hours

SECTION A

[25 Marks]

Answer all the questions in this section.

1. Which of the following data collection methods is most appropriate for gathering in-depth information about teachers' experiences with a new curriculum?
 - A. Online surveys
 - B. Structured interviews
 - C. Standardized tests
 - D. Large-scale questionnaires
2. Which sampling method would be most appropriate for selecting participants from a large urban school in Accra to ensure every student has an equal chance of being selected?
 - A. Convenience sampling
 - B. Stratified random sampling
 - C. Simple random sampling
 - D. Quota sampling
3. Which of the following is an example of data cleaning in an educational research context in Ghana?
 - A. Translating survey responses from local languages to English
 - B. Removing all incomplete survey responses
 - C. Correcting inconsistent spellings of school names in a dataset
 - D. Changing all negative responses to positive ones
4. To construct a frequency distribution, all these rules should be considered except _____.
 - A. There should be between 5 and 20 classes
 - B. The classes must be continuous
 - C. The classes must be exhaustive
 - D. The classes must be mutually inclusive

5. The level of measurement that ranks data, and precise differences between units or measures do exist however, there is no meaningful zero is referred to as _____
 - A. Nominal level
 - B. Ordinal level
 - C. Interval level
 - D. Ratio level
6. Data collected with all these variables are measured in the ratio scale except _____
 - A. Height
 - B. Time
 - C. Salary
 - D. Temperature
7. A fixed list of interview questions administered to all the participants in the same order is referred to as _____
 - A. Summative interview
 - B. Structured interview
 - C. Formative interview
 - D. Fixed-question interview
8. Which of the following is not employed in collecting data in a study involving social relationships between individuals in a group?
 - A. Questionnaires
 - B. Rating scales
 - C. Interviews
 - D. Observations
9. Which measure of central tendency includes the magnitude of scores?
 - A. Mean
 - B. Mode
 - C. Median
 - D. Range
10. Which of the following is not a disadvantage of using mean?
 - A. It is affected by extreme values
 - B. It cannot be computed in grouped data with open-ended class
 - C. It does not possess the desired algebraic property
 - D. It cannot be calculated for qualitative characteristics.
11. The two methods of finding mode in a discrete series are _____
 - A. Grouping method and ascending method
 - B. Table method and midpoint method
 - C. Grouping method and inspecting method
 - D. Ascending method and table method

12. To calculate the median, all the items of a series have to be arranged in . . .
A. Descending order
B. Ascending order
C. Ascending or descending order
D. None of the above
13. In statistics _____ divides the data into four equal parts.
A. Median
B. Quartiles
C. Mean
D. Deciles
14. Which of the following diagrams is used to find the value of mode graphically?
A. Pie chart
B. Bar graph
C. Histogram
D. Frequency polygon
15. The mean of ten numbers is 58. If one of the numbers is 40, what is the mean of the other nine?
A. 18
B. 60
C. 162
D. 540
16. Which of the following is not a method under measure of dispersion?
A. Standard deviation
B. Mean deviation
C. Range
D. Percentile
17. If all observations within a set of data are multiplied by five, then the new standard deviation would be . . .
A. Decreased by five
B. Increased by five
C. Half of the previous standard deviation
D. Multiplied by five
18. The coefficient of variation is a percentage expression for . . .
A. Standard deviation
B. Quartile deviation
C. Mean deviation
D. Variance

19. In a study comparing the effectiveness of two teaching methods in Ghanaian junior high schools, which statistical test would be most appropriate?
- A. Chi-square test
 - B. Independent samples t-test
 - C. Paired samples t-test
 - D. One-way ANOVA
20. When presenting data on student performance across different regions of Ghana, which of the following visualization methods would be most effective for showing the distribution of scores?
- A. Pie chart
 - B. Line graph
 - C. Box plot
 - D. Scatter plot
21. In a questionnaire about teaching practices in Ghana, what type of question is "On a scale of 1 to 5, how often do you use group work in your classroom?"
- A. Open-ended question
 - B. Dichotomous question
 - C. Multiple choice question
 - D. Likert scale question
22. Which of the following is NOT a key consideration when adapting a data collection instrument developed in another country for use in Ghanaian schools?
- A. Language and translation issues
 - B. Cultural relevance of the questions
 - C. Technological requirements for administration
 - D. The instrument's popularity in its country of origin
23. If $P(A)$ denotes the probability of an event A, then _____
- A. $P(A) < 0$
 - B. $P(A) > 1$
 - C. $0 \leq P(A) \leq 1$
 - D. $-1 \leq P(A) \leq 1$

24. If we throw two dice simultaneously, what would be the probability that we get a 10 or 11?

A. $\frac{5}{36}$

B. $\frac{5}{12}$

C. $\frac{1}{7}$

D. $\frac{1}{3}$

25. Suppose you have 5 distinct books and want to select 3 of them to take home, how many ways can you do that?

A. 10

B. 50

C. 100

D. 120

SECTION B
ANSWER ANY THREE QUESTIONS FROM THIS SECTION

- Q1a.** Match the term in Column A with its correct definition in Column B

10marks

A	B
Data collection	Reviewing data to derive useful insights
Questionnaire	Organizing raw data into a usable format
Sampling	Selecting a subset of individuals for study
Data coding	A method used to gather data from individuals
Data analysis	Ensuring data is in the correct format

- Q1b.** The ages at the time of death of the vice presidents of a country who have passed away are listed below.

15marks

90 83 80 73 70 51 68 79 70 71
 72 74 67 54 81 66 62 63 68 57
 66 96 78 55 60 66 57 71 60 85
 76 98 77 88 78 81 64 66 77 93 70

- i) Use the data to construct a grouped frequency distribution using 6 classes
- ii) Construct a histogram to represent the distribution in (i).
- iii) Use the graph to estimate the mode

- Q2a.** A researcher collected test scores from 100 students before and after implementing a new Numeracy program in a school. What statistical test would be appropriate to determine if there was a significant improvement in scores, State three reasons for your choice?

10marks

- Q2b.** The mean of the waiting times in an emergency room is 80.2 minutes with a standard deviation of 10.5 minutes for people who are admitted for additional treatment. The mean waiting time for patients who are discharged after receiving treatment is 120.6 minutes with a standard deviation of 18.3 minutes. Which times are more convergent?

15marks

Q3a. The following table shows the distribution of the masses of parcels in local Post Office. 20marks

Marks kg	Frequency
20-24	2
25-29	3
30-34	7
35-39	26
40-44	29
45-49	25
50-54	6
55-59	2

Using an assumed mean of 42 kg or otherwise, calculate:

- i. the mean
- ii. the standard deviation of the distribution
- iii. the variance of the distribution
- iv. the interquartile range.

Q3b. Discuss one ethical consideration that is particularly important when collecting data from students in Ghanaian schools. 5marks

Q4a. The data shown below involves the number of years of school completed by ten randomly selected Doctors and their scores on a test measuring prejudice. 20marks

Years of education	12	5	14	13	8	10	16	11	12	4
Score on prejudice test	1	7	2	3	5	4	1	2	3	10

Determine the correlation coefficient between years of education and scores on a prejudice test and state the implication of the relationship.

Q4b. Ghana holds a general presidential election every four years and it is anticipated that one of the two major parties (NDC and NPP) will win the elections. If the chance that NPP will win this year's election is $\frac{1}{2}$ and NDCs' chance of winning is $\frac{1}{2}$, what is the probability that the NDC or NPP will win? 5marks

Q5a. A teacher compared the commuting distance and number of absences for a group of students to the following data: 15marks

Commuting distance (Mile)	8	21	8	8	2	15	17	11
Number of absences (Year)	4	5	5	3	2	5	7	4

- i) Make a scatterplot of the data
- ii) Estimate the regression line
- iii) Predict the number of absences (per year) for a student with a commute of 40 miles.

Q5b. Assuming you have 5 distinct story books, and you want to select 3 of them to gift to your best performing lecturers before you go home. What are the possible combinations may have without any order. 10marks