DECEMBER 2023
EBS 350
STATISTICS AND PROBABILITY I
2 HOURS

Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
THIRD YEAR, END-OF-SECOND SEMESTER EXAMINATION, DECEMBER 2023

19TH DECEMBER 2023 STATISTICS AND PROBABILITY I 9:00 AM – 9:40 AM

This paper consists of two sections, A and B. Answer ALL the questions in Section A and TWO questions from Section B. Section A will be collected after the first 40 minutes.

SECTION A
(40 MARKS)

Answer ALL the questions in this Section.

Items 1 to 20 are stems followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

1. Arrange the following stages of processing of data in a correct sequence.
   I. Coding
   II. Editing
   III. Tabulation
   IV. Classification
   V. Using percentages

   A. I, II, III, IV, V
   B. II, I, IV, III, V
   C. III, IV, I, II, V
   D. V, I, II, III, IV

2. A researcher wants to study the association between gender and the use of mobile phones. Data collected for this study will be ..... data.
   A. classified
   B. continuous
   C. qualitative
   D. quantitative

3. The techniques by which we can study an individual's personality by observing his/her style of life, behaviour, manner, thoughts and feelings is called .....
   A. case history.
   B. inventory.
   C. projective inventory.
   D. rating scale.

4. Which of the following data is cheaper to collect? ..... data
   A. Collective
   B. New
   C. Primary
   D. Secondary

5. Which of the following sets of data has the same mean, median and mode?
   A. 6, 2, 5, 4, 3, 4, 1
   B. 2, 3, 7, 3, 8, 3, 2
   C. 4, 2, 2, 1, 3, 2, 3
   D. 4, 3, 4, 3, 4, 6, 4

6. The median of the numbers 10, 8, 2, 7 3 8, 5, 1 is k. If 10 is replaced by 1, then the new median is r. What is the value of $(k - r)$?
   A. -1.5
   B. 0
   C. 1
   D. None of the above

7. Find the mean of the given data in the table below.

Class interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80
frequency	9	13	6	4	6	2	3

   A. 23.95
   B. 35.70
   C. 39.95
   D. 43.95

8. What is the probability of drawing a red card with a face (king, queen or jack) from a standard deck of 52 cards?
   A. 13/52
   B. 21/52
   C. 29/52
   D. 8/13

9. Company A produces 10% defective products, company B produces 20% defective products and C produces 5% defective products. If choosing a company is an equally likely event, then find the probability that the product chosen is defective.
   A. 0.11
   B. 0.12
   C. 0.21
   D. 0.22

10. A programmer has a 95% chance of finding a bug every time she compiles her code, and it takes her 3 hours to rewrite the code every time she discovers a bug. Find the probability that she will finish her program by the end of her workday. (Assume that a workday is 9 hours)
    A. 28%
    B. 37%
    C. 44%
    D. 76%

11. The probability that person A completes all the tasks assigned is 50% and that of person B is 20%. Find the probability that all the tasks are completed.
    A. 0.15
    B. 0.25
    C. 0.35
    D. 0.45

12. For any discrete distribution, the standard deviation is ..... the mean deviation from the mean.
    A. equal to
    B. less than
    C. not less than
    D. square of

13. When the values in a series are **not** of equal importance, we calculate the .....
    A. arithmetic mean.
    B. geometric mean.
    C. mode.
    D. weighted mean.

14. Which of the following **cannot** be calculated for open-ended distributions?
    A. Mean deviation
    B. Range
    C. Standard deviation
    D. None of the above

15. Which of the following is an advantage of surveys as a tool for data collection? They can .....
    A. be conducted in natural or controlled settings.
    B. gather information from a large number of people.
    C. provide detailed information on behaviour and interactions.
    D. None of the above.

16. An example of the application of range in a real-world scenario would be .....
    A. fluctuation in share prices.
    B. quality control.
    C. weather forecasts.
    D. All of the above.

17. The average of squared deviations from the arithmetic mean is known as .....
    A. mean deviation.
    B. quartile deviation.
    C. standard deviation.
    D. variance.

18. The following scores were obtained by eleven students in an examination:
    7, 5, 8, 10, 9, 10, 5, 13, 8, 5, 4. Determine the modal score of the distribution.
    A. 5
    B. 8
    C. 10
    D. 13

19. A number is selected at random from the set $A = \{1, 2, 3, 4, \ldots\ldots\ldots, 40\}$. Find the probability that it is an odd number.
    A. $\frac{1}{10}$
    B. $\frac{13}{40}$
    C. $\frac{19}{40}$
    D. $\frac{9}{20}$

20. The probabilities that Mike and Emma solve a problem correctly are $\frac{2}{3}$ *and* $\frac{1}{5}$ *respectively*. If they both attempt the problem, find the probability that one of them solves it correctly.
    A. $\frac{2}{15}$
    B. $\frac{2}{5}$
    C. $\frac{3}{5}$
    D. $\frac{4}{5}$