FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - MAY 2024/2025

PROGRAMME: BIT

YEAR/SEM: YEAR 1/SEMESTER 2

COURSE CODE: BIT1208

NAME: BASIC STATISTICS

DATE: 2025-08-12

TIME: 9:00AM-12:00PM

INSTRUCTIONS TO CANDIDATES:

1. Read the instructions very carefully

2. The time allowed for this examination is STRICTLY three hours

3. Read each question carefully before you attempt and allocate your time equally between all the Sections

4. Write clearly and legibly. Illegible handwriting cannot be marked

5. Number the questions you have attempted

6. Use of appropriate workplace examples to illustrate your answers will earn you bonus marks

7. Any examination malpractice detected will lead to automatic disqualification.

DO NOT WRITE ANYTHING ON THE QUESTION PAPER

Section A Attempt all (40 Marks, Write the correct alternative in the booklet provided)

Question 1:

Find the mode of the call received on 7 consecutive day 11,13,13,17,19,23,25 A. 11 B. 13 C. 17 D. 23 2. Calculate the range of the given sets of data 7,47,8,42,47,95,42,96,2 A. 6 B. 94 C. 71 D. 84 3. The Mean of a random variable K is given by equation A. $E(K)$ B. $(EK)^2$ C. $E^2 - K^2$ D. None of these 4. Find the Mean of a constant k A. K B. k/2 C. k^2 D. 1 5. Find the Variance of the constant 'K' A. 1 B. 0 C. K^2 D. K/2 6. What is the standard deviation for the following set of scores: 1, 1, 1, 1, 1.

A. 0

B. 1

C. 4

D. 25 7. The median is always:

A. The most frequently occurring score in a data set

B. The middle score when results are ranked in order of magnitude

C. The same as the mean

D. The difference between the maximum and minimum scores. 8. What is the mean for the following scores: 2, 5, 4, 1, 8? A. 6 B. 4 C. 7 D. 8 9. What is the median for the following scores: 2, 5, 4, 1, 8?

A. 3.5

B. 4

C. 4.5

D. 7 10. A researcher studies the factors that determine the number of children future couples decide to have. The variable 'number of children' is a :

A. Discrete variable

B. Continuous variable

C. Categorical variable

D. Ordinal variable 11. The seminar rooms in the library are identified by the letters A to H. A researcher records
the number of classes held in each room during the first semester. What kind of graph
would be appropriate to present the frequency distributions of these data?

A. Histogram

B. Scatterplot

C. Bar chart

D. Box plot   12. A researcher is curious about the IQ of students at IUEA. The entire group students is an example of a:

A. Parameter

B. Statistic

C. Population

D. Sample 13. A set of scores is presented in a histogram. The histogram shows a series of bars that tend
to decrease in height from left to right. What is the shape of the distribution?

A. Leptokurtic

B. Positively skewed

C. Negativity skewed

D. Normal 14. Normally distributed data are normally referred to as:

A. Bell-shaped

B. Asymmetrical

C. Skewed

D. Peaked 15. If the scores on a test have a mean of 26 and a standard deviation of 4, what is the z-score for a score of 18? A. 1 B. -1 C. -2 D. 2 16. A scatterplot shows:

A. The frequency with which values appear in the data.

B. The average value of groups of data.
C. Scores on one variable plotted against scores on a second variable.
D. The proportion of data falling into different categories 17. In a linear regression equation, Y=a + bX, what is the b denote?
A. The regression coefficient, the slope of the line.
B. The intercept with the Y-axis.
C. The correlation coefficient, the strength of the line
D. The score on the variable X. 18. The population mean is called _____.   A. Discrete variable   B. Parameter   C. Sampling unit   D. Continuous variable19. The branch of statistics concerned with the procedure and methodology for obtaining valid conclusion is called A. Descriptive statistics B. Inferential statistics C. Sample Statistics D. Deductive Statistics20. The probability of obtaining at least a head when two coins are tossed is given by A. ¼ B. ¾ C. 2/4 D. ½

Section B Attempt 4 (60 marks, each question carries 15 marks)

Question 1:

(a) The average annual rainfall in a certain region is 1200 mm with a standard deviation of 150 mm. Assuming the distribution of rainfall is normal, what is the probability that the annual rainfall is between 1000 mm and 1400 mm? (b) The average score on a standardized test is 500 with a standard deviation of 100. If the scores are normally distributed, what is the probability of an individual scoring above 600?

Question 2:

(a). The average number of acres burned by forest and range fires in a large New Mexico County is 4,300 acres per year, with a standard deviation of 750 acres. The distribution of the number of acres burned is normal. What is the probability that between 2,500 and 4,200 acres will be burned in any given year? (b). Most graduate schools of business require applicants for admission to take the Graduate Management Admission Council's GMAT examination. Scores on the GMAT are roughly normally distributed with a mean of 527 and a standard deviation of 112. What is the probability of an individual scoring above 500 on the GMAT?

Question 3:

The following sample consists of the lengths of leaves in centimeters collected from the compound of IUEA: 10, 6, 17, 15, 23, 7, 6, 9, 10, 6, 13, 12. Find the following:(i)   mean length of leaves (ii)   Median length of leaves(iii)   Mode(iv)   Variance (v)   Standard deviation

Question 4:

A company has the following data on its sales during the last year in each of its regions and the corresponding number of salespersons employed during this time:

Region	Sales (units)	Salespersons
A	236	11
B	234	12
C	298	18
D	250	15
E	246	13
F	202	10

(i)   Develop a regression model for the data. (ii)   forecast the number of sales that would be expected next year in regions that employed (a) 14 salespersons; and (b) 25 salespersons.

Question 5:

The table below shows the prices of some food items and their corresponding weights in years 2000, 2005 and 2010.

Commodity	Unit	Price(in UgShs)			Weight
		2000	2005	2010	
Matooke	Bunch	17,000	15,000	20,000	5
Meat	Kilogram	7,500	8,000	8,500	4
Posho	Kilogram	3,000	2,800	2,600	3
Beans	Kilogram	3,200	3,000	2,800	2
Vegetables	Kilogram	1,000	1,500	2,000	1

Using **2000** as the base year, calculate the: (a)   Simple aggregate price index for **2005**. Comment on your result.   (b)   Price relative for each food item for **2010**.   (c).   Weighted average price index for **2010**.

Question 6:

The probability of winning a game is 4/5. If ten games are played, what is the (i)   Mean number of successes (ii)   Variance and standard deviation (iii)   Probability of at least 8 successes. (iv)   Probability of at most 3 successes.