



AMREF INTERNATIONAL UNIVERSITY

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF NURSING & MIDWIFERY SCIENCES

END SEMESTER 2026 EXAMINATIONS

COURSE CODE AND TITLE : BSN 315 : Biostatistics

DATE : 6TH AUGUST 2026

Duration: 2 HOURS

Start: 9AM

Finish: 11AM

INSTRUCTIONS

1. This exam is out of 70 marks
2. This Examination comprises THREE Sections. Section I: Multiple Choice Questions (20 marks) Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 marks)
3. Answer ALL Questions.
4. Do Not write anything on the question paper -use the back of your booklet for rough work if need be.

SECTION I: MULTIPLE CHOICE QUESTIONS**(20 MARKS)**

1. The entire set of individuals relevant to a study is called:
 - a) Sample
 - b) Population
 - c) Variable
 - d) Parameter
2. The following is a qualitative variable:
 - a) Age
 - b) Blood pressure
 - c) Gender
 - d) Weight
3. The following is a continuous variable?
 - a) Number of patients
 - b) Temperature
 - c) Gender
 - d) Marital status
4. A pie chart is most suitable for presenting:
 - a) Continuous data
 - b) Categorical data
 - c) Interval data
 - d) Regression data
5. A frequency polygon is drawn by joining:
 - a) The tops of bars
 - b) Midpoints of class intervals
 - c) Class boundaries
 - d) Percentiles
6. The most frequently occurring value in a dataset is the:
 - a) Mean
 - b) Median
 - c) Mode
 - d) Range
7. A binomial distribution describes:
 - a) Events with more than two outcomes
 - b) Events with two possible outcomes
 - c) Normal distribution
 - d) Poisson distribution
8. The normal distribution curve is:
 - a) Skewed left
 - b) Skewed right
 - c) Symmetrical
 - d) Irregular
9. A hypothesis is:
 - a) A proven fact
 - b) A testable statement

- c) A descriptive table
- d) Always true
- 10. Type I error occurs when:
 - a) Null is wrongly rejected
 - b) Null is wrongly accepted
 - c) Alternative is ignored
 - d) Sample is large
- 11. Type II error occurs when:
 - a) Null is rejected
 - b) Null is wrongly accepted
 - c) Alternative is rejected
 - d) Mean = median
- 12. Statistical inference means:
 - a) Collecting raw data
 - b) Drawing conclusions about a population from a sample
 - c) Creating graphs only
 - d) Avoiding hypothesis testing
- 13. ANOVA is applied when comparing:
 - a) Two group means
 - b) More than two group means
 - c) Variances
 - d) Medians
- 14. A positive correlation means:
 - a) As one variable increases, the other decreases
 - b) Both variables increase together
 - c) No relationship exists
 - d) Random variation
- 15. Non-parametric tests are used when:
 - a) Data are normally distributed
 - b) Data do not meet parametric assumptions
 - c) Sample size is large
 - d) Standard deviation is zero
- 16. Stratified sampling is useful when:
 - a) Population is homogeneous
 - b) Population has subgroups
 - c) Randomness is ignored
 - d) Population is small
- 17. A histogram is used for:
 - a) Categorical data
 - b) Continuous data
 - c) Nominal data
 - d) Correlation data

18. A scatter plot shows:
- Frequency
 - Relationship between two variables
 - Central tendency
 - Probability
19. Kurtosis refers to:
- Peakedness of distribution
 - Spread of data
 - Average of values
 - Probability
20. A statistic refers to:
- Population value
 - Sample characteristic
 - Variance
 - Hypothesis

SECTION II: SHORT ANSWER QUESTIONS **(30 marks)**

21. Explain three (3) differences between population and sample with examples. (6 marks)
22. Distinguish between discrete and continuous variables. (6 marks)
23. Outline six (6) advantages and disadvantages of mean as a measure of central tendency. (6 marks)
24. Describe null and alternative hypotheses and illustrate with a nursing-related example. (6 marks)
25. Explain three importance of correlation and regression in health research. (6 marks)

SECTION III: LONG ANSWER QUESTION **(20 marks)**

26. a) A nursing researcher wants to test whether a new diet reduces cholesterol.
- A sample of 25 patients had a mean cholesterol level of 190 mg/dL with a standard deviation of 20 mg/dL.
 - The population mean cholesterol is known to be 200 mg/dL.
- At $\alpha = 0.05$, perform a one-sample t-test to determine if the new diet is effective. (10 marks)
- b) Two groups of patients were given different types of wound dressings.
- Group A ($n = 12$): mean healing time = 14 days, SD = 2.5 days
 - Group B ($n = 10$): mean healing time = 11 days, SD = 2.0 days
- At $\alpha = 0.05$, test whether there is a significant difference between the two groups using an independent samples t-test. (10 marks)