



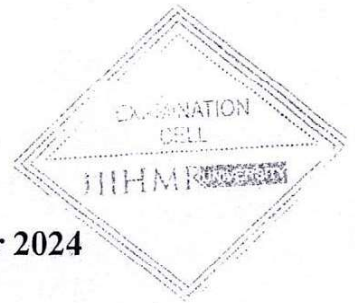
Institute of Health Management Research

MBA Hospital and Health Management

Batch-29th (2024-2026)

First Year, Term 1, End Term Examinations, December 2024

CC – 604 Bio-Statistics



Time - 3 Hour

Maximum Marks: 50 (Minimum Marks: 20)

Instructions to students:

- This question paper contains 2 printed pages.
- Don't write anything on the Question Paper except your Enrolment No.

Part A

(Maximum Marks: 5)

Q1. Choose the correct option for the following (1 mark each):

- (a). Which of the following is a continuous variable?
 - (i) Blood type (A, B, AB, O)
 - (ii) Height in centimeters
 - (iii) Type of hospital (public or private)
 - (iv) Severity of illness (mild, moderate, severe)
- (b). Which of the following is true about a normal distribution?
 - (i) The mean, median, and mode are equal
 - (ii) The curve is asymmetrical about its mean
 - (iii) It is defined only for discrete data
 - (iv) It has multiple peaks
- (c). The confidence interval is constructed using
 - (i) Statistic
 - (ii) Parameter
 - (iii) Summary measure
 - (iv) Statistic and its parameter
- (d). In a study carried out to identify the markers of type 2 diabetes, the proportion of subjects who smoke are 72.6% and 66.7% for the new diabetic cases and controls, respectively. What test should be used to test whether the proportion of smokers is significantly different between the two groups?
 - (i) z-test for two proportions
 - (ii) Paired 't' - test
 - (iii) Single proportion test
 - (iv) Independent samples t-test
 - (v) One sample t-test
- (e). Which type of graph is most appropriate for showing the distribution of a continuous variable?
 - (i) Pie chart
 - (ii) Line graph
 - (iii) Histogram
 - (iv) Bar diagram

Part B**(Maximum Marks: 15)**

Answer the following questions (5 marks each). Note that Q2 is mandatory and there is a choice between Q3 & Q4 and Q5 & Q6.

- Q2. Why concepts of biostatistics are important in hospitals and health management field? Give your answer by providing a suitable example.
- Q3. Write a short note on the four data types and give examples.
- OR
- Q4. Explain different measures of central tendency.
- Q5. Write in detail about the normal distribution and explain its properties.
- OR
- Q6. Discuss the two types of errors in hypothesis testing through examples.

Part C**(Maximum Marks: 30)**

Answer the following questions, in detail (10 marks each). Note that Q7 is mandatory and there is a choice between Q8 & Q9 and Q10 & Q11.

- Q7. Outline the various steps involved in statistically testing the comparison of a sample proportion with a population proportion. Illustrate your explanation with a relevant example.
- Q8. A random sample of 80 patients from a hospital shows that the mean systolic blood pressure (SBP) is 130 mmHg with a standard deviation of 15 mmHg. Construct 95% and 99% confidence intervals for the mean systolic blood pressure of patients in the hospital. Interpret the results of the confidence intervals in the context of the study.
- OR
- Q9. A study was conducted to estimate the prevalence of hypertension in adults in a rural community. From a sample of 500 adults, 30% were found to have hypertension. Construct 95% and 99% confidence intervals for the population prevalence of hypertension. Interpret the results of these confidence intervals in the context of the study.
- Q10. The average hemoglobin level of pregnant women in a rural area was reported as 10.5 g/dL in 2000. From a sample of 120 pregnant women surveyed in the same area in 2020, the mean hemoglobin level ($\bar{x}$) was found to be 11.2 g/dL, with a standard deviation (s) of 1.8 g/dL. Test whether the sample mean hemoglobin level in 2020 is significantly different from 10.5 g/dL at a significance level of 0.05.
- OR
- Q11. Distinguish between correlation and regression by giving examples.