

Roll Number

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SCHOOL OF CHEMICAL AND LIFE SCIENCES
B.Sc. (Hons with Research)/ B.Sc. (Hons) as per FYUP
Semester I (2023)
Paper Code: BBC/BBT/BBO/BCH/BTX/BCR MDC 101
Paper Title: BASICS OF STATISTICS

Time: 2 hours

Maximum Marks: 45

Write the Roll No. at the top immediately on receipt of this Question Paper. Attempt all Questions. All parts of the Question must be attempted in continuation. Start Answering each question on new page.

SECTION A

Fill in the blanks in the following questions. Answer all questions

[1x10=10 marks]

1. Type II error is when the Null Hypothesis is _____ and Alternate Hypothesis is _____.
2. The limits indicate interquartile range are _____ and _____.
3. For a random sample of 35 observations had sample mean $\mu = 56.4$ and the standard deviation is $SD=5$. The values corresponding to 95% confidence interval are _____ and _____.
4. When findings from a study (sample population) are applied to the larger population, the statistics is known as _____.
5. When for a sample, the mean, median and mode are equal, it is called as _____.
6. The commonly used level for statistical significance level for p value is _____.
7. In hypothesis testing, when we say that there is β error of 20%, what is the power of the test _____?
8. A hypothesis testing resulted the p value as 0.07, the test findings shall be interpreted as statistically _____.
9. When a statistical test is to be used for hypothesis testing for means of three samples, the test to be used is _____.
10. When relationship (correlation) between variables is tested, the result is expressed as _____.

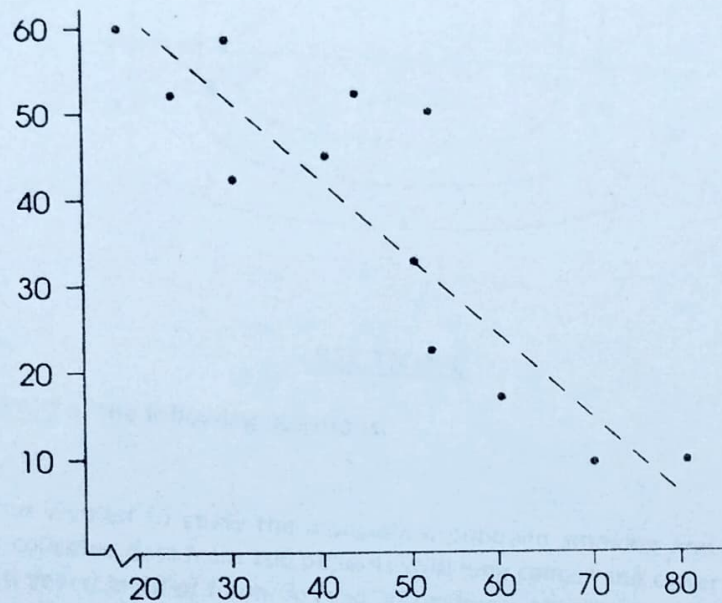
SECTION B

Attempt ANY THREE questions from the following.

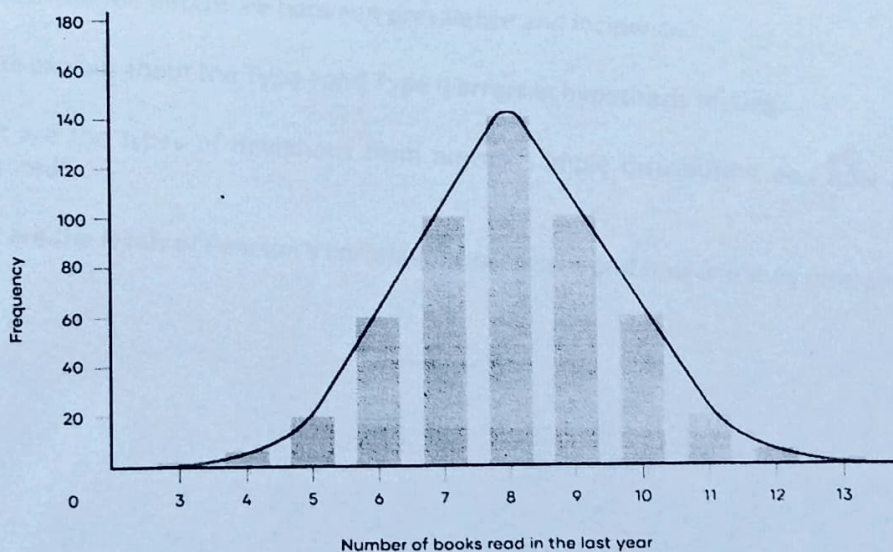
[5x3=15]

1. In a study population of 1500, during data collection round in January 2020, 100 people were diabetic. In the same population, during January 2023, 175 people were found to be diabetic. What is the incidence of diabetes in the population?

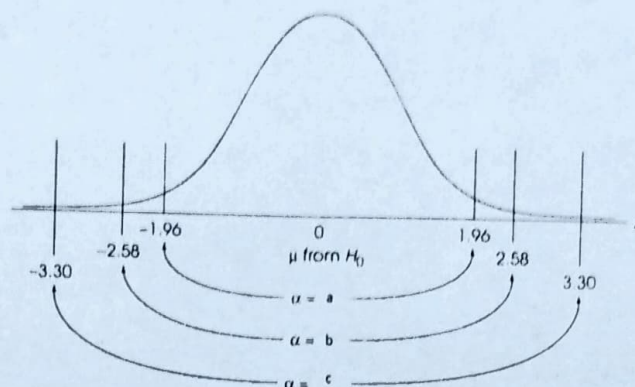
2. A survey in Sangam Vihar, Delhi among 10000 children, 250 children aged less than five years were found to be underweight for the age. How would you present the data for the population?
3. A study found the association between the amount of fibre intake and body weight and presented this graph. Please interpret the graph and write the type of relationship.



4. In the following figure showing distribution of data for a study population, what is the expected relationship between the mean, mode and median?



5. In the figure below, for hypothesis testing, what are the α error levels do a, b and c refer to. Please mention the values for a, b and c.



SECTION C

Answer ANY TWO of the following questions.

[10 x 2=20]

1. A researcher wanted to study the association between smoking and lung cancer. The researcher collected data from 100 patients with lung cancer and observed long smoking history (>10 years) in 80 of them. Among 200 patients admitted to the hospital with leg injury, but without lung cancer, 20 had long smoking history. Write the Null Hypothesis and Alternate Hypothesis. What is your interpretation about the association between smoking and lung cancer in the study population?
2. Please write the difference between prevalence and incidence.
3. Please explain about the Type I and Type II errors in hypothesis testing.
4. What are the types of deviations from normal sample distribution and how are they measured?
5. What are the levels of Pearson's correlation coefficient and how are they interpreted?

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