

LNCT UNIVERSITY

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Enroll No.....

Class Roll No.....

First Mid Semester Examination, October 2024

Probability modelling and reasoning with python (AL 303)

Branch: CS/AI/ML Semester: III

Time 1:30 Hrs

Max. Marks 20

Note: All questions are compulsory

Q.1 How can you handle missing data in observational studies?

OR

Suppose you have the following dataset representing the number of hours spent studying per week by 15 students:

2, 4, 4, 5, 7, 8, 8, 9, 10, 12, 15, 17, 20, 22, 30 Calculate the IQR and Draw box plot.

Identify any outliers using the IQR method.

(CO 1 5marks)

Q.2 Define sample space and an event. Give an example of a sample space for a coin toss experiment, and list two possible events.

OR

You are given the following data on hours of study and test scores for Students:
(2, 55), (4, 60), (6, 65),
(8, 70), (10, 75), (12, 80), (14, 85), (16, 90)

Calculate the Pearson correlation coefficient. What does this coefficient indicate about the relationship between hours of study and test scores? **(CO1 5marks)**

Q.3. A bag contains 4 red, 3 blue, and 5 green balls. If one ball is drawn at random, what is the probability that it is red given that it is not blue?

OR

A set of exam scores 45, 56, 67, 68, 72, 74, 75, 79, 82, 85, 89, 92, 95, 97

Find the interquartile range (IQR) of the exam scores. **(CO2 5 marks)**

Q.4 What is conditional probability, and how does it differ from regular probability

OR