SET-3

INDIRA UNIVERSITY, PUNE

SCHOOL OF INFORMATION TECHNOLOGY-BCA

Backlog Examination (2025 Pattern) April/ May – 2026 - Semester – I

Subject Name: Discrete Mathematics and Statistics **Max. Marks: 25**
Subject Code: 25BCA109T **Time: 1:30 Hrs.**

Instructions

- All Questions are Compulsory.

CO #	Cognitive Ability	Course Outcome
CO1	**Remember**	Recall fundamental concepts of discrete mathematics and statistics, such as set theory, logic, probability, and data types.
CO3	**Apply**	Apply discrete mathematics techniques, such as counting methods, relations, and graph algorithms, to solve problems in computer science and data analysis.
CO5	**Evaluate**	Evaluate the correctness of logical arguments, solve optimization problems, and assess statistical models for their accuracy and reliability.

Q1.	**Attempt any 5 out of 7. (1 mark each) (5 Marks)** a. Let A is the set of all days in a year. Write set A using Roster method. b. Express the following compound statements symbolically without examining the truth values: Indira University, Pune is open or there is a holiday. c. Define Injective function. d. Define Bounded set. Give an example. e. Define Tautology. f. State the multiplication theorem of probability. g. Define positive correlation.	CO1
Q2.	**Attempt any 2 out of 4. (5 marks each) (10 Marks)** a. Construct the truth table for each of the following statement patterns: $p \rightarrow (q \rightarrow p)$ b. A card is drawn at random from a deck of 52 cards. Find the probability that it is either a spade or a face card. c. Suppose you conducted a survey about the number of students who prefer different fruits. Draw a simple bar diagram for the given data. d. Define geometric mean. Calculate the GM of 2, 4, 8, 16.	CO3

Fruit	Apple	Banana	Orange	Mango
No. of Students	10	15	7	12

Q.3.	**Attempt the questions.** a. Let $A = \{1,2,3,4\}$ and $R = A \times A$. Evaluate whether R an equivalence relation on A? **(5 Marks)** b. Write a short note on different types of correlation. **(5 Marks)** **OR** Consider the set X = {1, 2, 3, 4} and the following relation 'R' on X. R = {(,1 ,1), (1, 3), (1, 4), (2, 1), (2, 2), (3, 2), (3, 3), (4, 1)} Use Warshall's algorithm to obtain transitive closure of R. **(10 Marks)**	CO5

*****