JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

BCA/ B.Sc (Forensic Science)- I Semester

COURSE CODE (CREDITS): 25B11MA111 (03) MAX. MARKS: 15

COURSE NAME: Fundamentals of Mathematics

COURSE INSTRUCTOR: NKT MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator is not allowed

Q.No	Question	CO	Marks
Q1	Let set $A = \{1,2,3,4\}$, $B = \{3,4,5,6\}$ and $C = \{1,6,7,8\}$ Find (a) $A - B$ (b) $A - C$ (c) $B - C$ Also represent the differences with the help of Venn diagram.	CO-1	3
Q2	Consider the following data for 120 mathematics students at a college concerning the languages French, German and Russian: 65 study French 45 study German 42 study Russian 20 study French and German 25 study French and Russian 15 study German and Russian 8 study all three languages Find the number of students who study (a) Only French (b) Only German (c) Only Russian (d) None of the language (e) At least one of the language (f) Only one of the language	CO-1	3
Q3	Let $A = \{1,2,3,4,6\}$ and let R be a relation on A defined by " x $divides$ y" ,written $x\|y$ (a) Write R as a set of ordered pairs. (b) Draw its directed graph (c) Determine the matrix of the relation (d) Find R^{-1}	CO-1	3

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Q4	Let R and S be the following relations on set $A = \{1,2,3\}$: $R = \{(1,1),(1,2),(2,3),(3,1),(3,3)\}, S = \{(1,2),(1,3)(2,1),(3,3)\}$ Find (a) RoS (b) RoR (c) SoS (d) Find the matrices M_R ,M_S and M_{RoS} of the respective relations R, S *and* RoS and compare M_{RoS} to the product of matrices $M_R.M_S$	CO-1	4
Q5.	Given set $A = \{1,2,3,4\}$,consider the following relation in A $R = \{(1,1),(2,2),(2,3),(3,2),(4,2),(4,4)\}$ Is R (a) Reflexive (b) Symmetric (c) Transitive (d) Ant symmetric	CO-1	2