JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

BCA (II Semester)/B.Tech(IV Semester)

COURSE CODE (CREDITS):25B1MA213 (04) MAX. MARKS: 15

COURSE NAME: Discrete Computational Mathematics

COURSE INSTRUCTOR: Dr. Neel Kanth 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 calculators is not allowed

Q.No	Question	CO	Marks
Q1	Let M_R and M_S denote respectively the matrices of the relation R and S defined as $M_R = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ and $M_S = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ Find the matrix M_{RoS}	CO-1	3
Q2	Let $A = \{a, b, c, d\}$,and consider the relation from A *to* A defined by $R = \{(a,a), (a,b), (a,c), (a,d), (b,b), (b,d), (c,c), (c,d), (d,d)\}$ Write the matrix representation of the relation R and show that it is not an equivalence relation.	CO-1	3
Q3	Show that the relation 'less than or equal to' on the set of integers is a partial order relation.	CO-1	3
Q4	Solve the recurrence relation $a_n - 9a_{n-1} + 20a_{n-2} = 0$, $a_0 = -3, a_1 = -10$ using generating function	CO-1	3
Q5	Draw the Hasse diagram of D210 (a) Find the greatest and least element (b) Find the maximal and minimal elements	CO-2	3

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