

(For those admitted in June 2023 and later)

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
III	PART – III	ELECTIVE GENERIC-3	U23CA3A3	DISCRETE MATHEMATICS

Maximum: 75 Marks

1

CO2	K3	12a.	Write about the Addition and Multiplication of Functions. (OR)
CO2	K3	12b.	Let $f: R \rightarrow R$ be defined by $f(x) = x+1$ and $g: R \rightarrow R$ be defined as $g(x) = 2x^2 + 3$. Find $f \circ g$ and $g \circ f$. Is $f \circ g = g \circ f$?
CO3	K4	13a.	Tabulate the truth table for five basic Connectives. (OR)
CO3	K4	13b.	Examine that the proposition $p \vee \sim(p \wedge q)$ is a tautology.
CO4	K4	14a.	Define the Matrix and explain with example. (OR)
CO4	K4	14b.	Compute the determinant of 3*3 Matrix. $\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$
CO5	K5	15a.	Define Graphs and explain the Basic terminologies. (OR)
CO5	K5	15b.	Prove that the maximum number of edges in a graph with n vertices is $2n(n-1)$.

Course Outcome	Bloom's K-level	Q. No.	<p align="center">SECTION – C (5 X 8 = 40 Marks) Answer ALL Questions choosing either (a) or (b)</p>
CO1	K3	16a.	Explain the following with suitable examples (i) Classification of Relations (ii) Composition of Relations (iii) Inverse of a Relations (OR)
CO1	K3	16b.	Determine the representation of Relations on a set.
CO2	K4	17a.	Analyse the types of function with example. (OR)
CO2	K4	17b.	Explain the following with suitable examples. (i) Composition of Functions (ii) Inverse of a Functions
CO3	K4	18a.	List the set of Logical Operators and explain it. (OR)
CO3	K4	18b.	Construct the truth table for each of the following compound propositions. (i) $(p \wedge q) \vee (p \wedge r)$ (ii) $\sim(p \vee q) \vee (\sim p \wedge \sim q)$ (iii) $p \wedge (q \vee r)$
CO4	K5	19a.	Briefly explain about types of matrices with examples. (OR)
CO4	K5	19b.	Prove that $(AB)^T = B^T A^T$ $A = \begin{pmatrix} 1 & 2 & -1 \\ 3 & 0 & 2 \\ 4 & 5 & 0 \end{pmatrix} \quad B = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 0 & 1 & 3 \end{pmatrix}$
CO5	K5	20a.	Briefly explain about Types of Graphs. (OR)
CO5	K5	20b.	Briefly explain about Operations on Graph.