Reg. No. | | | | | | | | |

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2025.
(For those admitted in June 2024 and later)

PROGRAMME AND BRANCH: B.Sc., COMPUTER SCIENCE

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
I	PART - III	ELECTIVE GENERIC - 1	U24CS1A1	DISCRETE MATHEMATICS

Date & Session:12.11.2025/FN **Time : 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	**SECTION – A (10 X 1 = 10 Marks)** Answer ALL Questions.
CO1	K1	1.	A set which contains a definite number of elements is called a. a) finite set b) definite set c) infinite set d) sub set
CO1	K2	2.	Let A={1,2,3,4}, then |A|=_____. a) 1 b) 2 c) 3 d) 4
CO2	K1	3.	If a relation is symmetrical, reflexive and transitive, then it is a ________. a) equal relation b) equivalence relation c) symmetric relation d) asymmetric relation
CO2	K2	4.	A function from A to B is denoted by f:A->B. B is called the _______ of f. a) domain b) preimage c) codomain d) function
CO3	K1	5.	$p \leftrightarrow q$ is logically equivalent to. a) $(p\rightarrow q) \rightarrow (q\rightarrow p)$ b) $(p\rightarrow q) \vee (q\rightarrow p)$ c) $(p\rightarrow q) \wedge (q\rightarrow p)$ d) $(p\wedge q) \rightarrow (q\wedge p)$
CO3	K2	6.	A compound proposition will be known as a ________ iff all possible truth values of propositional variables only contain false. a) tautology b) contingency c) contradiction d) valid
CO4	K1	7.	Which of the following matrix having only one row and multiple columns? a) row b) column c) diagonal d) symmetric
CO4	K2	8.	All the diagonal elements of a skew symmetric matrix is. a) 0 b) 1 c) 2 d) any integer
CO5	K1	9.	If determinant of a matrix A is zero then A is a _____________. a) singular matrix b) non-singular matrix c) symmetric d) skew symmetric
CO5	K2	10.	adj A= transpose of the _______ matrix. a) factor b) cofactor c) adjoint d) determinant

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** Answer ALL Questions choosing either (a) or (b)
CO1	K3	11a.	Distinguish finite set, empty set and subset with example. **(OR)**
CO1	K3	11b.	Let A={1,2} and B={3,4,5}. Find A*B, A*A and B*B.

CO2	K3	12a.	Demonstrate reflexive relation and symmetric relation with an example.
			(OR)
CO2	K3	12b.	Examine one to one function and onto function with example.
CO3	K4	13a.	Let p: Babin is rich, q:Babin is happy. Write simple verbal sentences which describes each of the following statements. (i)$p \vee q$ (ii)$p \wedge q$ (iii)$q \rightarrow p$ (iv)$p \vee \sim q$ (v)$q \leftrightarrow p$
			(OR)
CO3	K4	13b.	Show that $[(A \rightarrow B) \wedge A] \rightarrow B$ is a tautology.
CO4	K4	14a.	Paraphrase zero matrix, diagonal matrix and scalar matrix with example.
			(OR)
CO4	K4	14b.	Compute the determinant of the matrix $A=\begin{pmatrix} 1 & 3 & 0 \\ 4 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix}$.
CO5	K5	15a.	Discuss singular matrix and non-singular matrix with example.
			(OR)
CO5	K5	15b.	Summarize the properties of inverse of a matrix.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** Answer **ALL** Questions choosing either (a) or (b)
CO1	K3	16a.	Discuss the following with example (i) Equality of sets (ii)proper sets (iii)power sets (iv)universal set
			(OR)
CO1	K3	16b.	Discuss operations on sets.
CO2	K4	17a.	Let A= {1,2,3} . Check whether the following relations are reflexive, symmetric, anti symmetric or transitive. i. R= {(1,1) , (2,2) , (3,3) , (1,3) , (1,2) } ii. R= {(1,1) , (2,2) , (1,3) , (3,1) } iii. R= {(1,1) , (2,2) , (3,3) , (1,2) , (2,1) , (2,3) , (3,2)}
			(OR)
CO2	K4	17b.	If P={(1,2)(2,4),(3,4)}, Q={(1,3),(2,4),(4,2)} Find (i) PUQ, P∩Q (ii) domains of P, PUQ, P∩Q (iii)Ranges of Q, PUQ, P∩Q
CO3	K4	18a.	Prove that $\sim(A \vee B)$ and $[(\sim A \wedge \sim B)]$ are equivalent.
			(OR)
CO3	K4	18b.	State and prove De-Morgan's law.
CO4	K5	19a.	Discuss the following with example. i) transpose of a matrix ii) symmetric and skew-symmetric matrices iii)complex matrix
			(OR)
CO4	K5	19b.	If $A = \begin{pmatrix} 1 & 2 & -1 \\ 3 & 0 & 2 \\ 4 & 5 & 0 \end{pmatrix}$ $and\ B = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 0 & 1 & 3 \end{pmatrix}$ show that $(AB)^T = B^T A^T$.
CO5	K5	20a.	Evaluate the adjoint of the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 2 & -4 & 5 \\ 6 & 1 & 1 \end{pmatrix}$
			(OR)
CO5	K5	20b.	Compute the inverse of the matrix $\begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}$