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

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.
(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: 14.11.2024/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.	What is the cardinality of the set {a, b, c}? a)1 b) 2 c)3 d) 4
CO1	K2	2.	If A and B are two sets, and A ⊆ B, what can be concluded about the elements of A? a) All elements of A are in B b) A is a universal set c) A is equal to B d) A and B have no common elements
CO2	K1	3.	What does the domain represent in a function a) The set of possible input values b) The set of possible output values c) The set of all real numbers d) The set of ordered pairs
CO2	K2	4.	What is the domain of the function $f(x) = 1/x$? a) All real numbers b) All real numbers except 0 c) All integers d) Only positive real numbers
CO3	K1	5.	Which of the following is a tautology? a) $p \land \neg p$ b) $p \lor \neg p$ c) $\neg(p \land q)$ d) $p \leftrightarrow q$
CO3	K2	6.	What is the truth value of the proposition $p \land q$ when p is true and q is false? a) True b) False c) Cannot be determined d) Not Applicable
CO4	K1	7.	What type of matrix is a matrix where all elements above the main diagonal are zero? a) Diagonal matrix b) Lower triangular matrix c) Upper triangular matrix d) Skew-symmetric matrix
CO4	K2	8.	If A is a symmetric matrix, then which of the following is true? a) $A = A^T$ b) $A = -A^T$ c) A is an identity matrix d) A is an diagonal matrix
CO5	K1	9.	Which of the following matrices is singular? a) A matrix with determinant zero b) A matrix with all diagonal elements equal c) A diagonal matrix d) An identity matrix
CO5	K2	10.	What is the inverse of a non-singular matrix A? a) The transpose of A b) The adjoint of A c) A matrix B such that AB = I d) A different Matrix

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.	Identify the properties of power sets.
			(OR)
CO1	K3	11b.	Find the operations on sets with examples.
CO2	K3	12a.	Discover equivalence relations with suitable examples.
			(OR)
CO2	K3	12b.	Write the concept of functions and their types.
CO3	K4	13a.	Assign a truth value to each of the following statements. (i) 5+5=10 ∨ 1>2 (ii) 6×4=21 ∨ 2+7=10.
			(OR)
CO3	K4	13b.	Analyze the concept of logical equivalence and its importance in logic.
CO4	K4	14a.	Distinguish between Symmetric and Skew-Symmetric Matrix.
			(OR)
CO4	K4	14b.	Examine the Transpose of a Matrix.
CO5	K5	15a.	Interpret the properties of the inverse of a matrix.
			(OR)
CO5	K5	15b.	Criticize how to find the adjoint of a matrix and its properties.

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.	Write the cartesian product of sets and its properties.
			(OR)
CO1	K3	16b.	Organize the concept of proper sets with detailed examples.
CO2	K4	17a.	Categorize the properties of equivalence classes with suitable examples.
			(OR)
CO2	K4	17b.	Examine the types of relations on sets with suitable examples.
CO3	K4	18a.	Illustrate the different types of normal forms in propositional logic with examples.
			(OR)
CO3	K4	18b.	Comment tautologies and contradictions with suitable examples.
CO4	K5	19a.	Criticize the determinant of a matrix and its applications in matrix algebra.
			(OR)
CO4	K5	19b.	Interpret the properties of the transpose of a matrix with examples.
CO5	K5	20a.	Evaluate the adjoint of a Square Matrix
			(OR)
CO5	K5	20b.	Predict the Properties of Inverse Matrices