SRM Institute of Science and Technology
College of Engineering and Technology
Department of Mathematics
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2023-2024(ODD)

Assignment - 2

Date: 24/08/2023

Course Code &Title: 18MAB302T-Discrete Mathematics for Engineers
Year & Sem: III/V

Note:

Answer All the Questions

S.No.	Course Outcome		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	Apply the concepts of set theory and its operations in data structures and mathematical modeling languages	3	3	-	-	-	-	-	-	-	-	-	-
2	CO2	Solve problems using counting techniques and understanding the basics of number theory	3	3	-	-	-	-	-	-	-	-	-	-
3	CO3	Comprehend and validate the logical arguments using concepts of inference theory	3	3	-	-	-	-	-	-	-	-	-	-
4	CO4	Inculcate the curiosity for applying the concepts of algebraic structures to coding theory	3	3	-	-	-	-	-	-	-	-	-	-
5	CO5	Apply graph theory techniques to solve wide variety of real world problems	3	3	-	-	-	-	-	-	-	-	-	-
6	CO6	Acquire knowledge in mathematical reasoning, combinatorial analysis and discrete structures	3	3	-	-	-	-	-	-	-	-	-	-

Q. No		BL	CO	PO	PI
1	In how many ways 7 boys and 5 girls can sit in a row if the boys are to sit together and the girls are to sit together?	2	2	3	2.1.3
2	If there are 5 points inside a square of side length 2, prove that two of the points are within a distance of $\sqrt{2}$ each other	2	2	3	2.1.3
3	Using the Euclidean algorithm to find the greatest common division of 28844 and 15712	3	2	3	2.1.3
4.	Find the integers m and n such that 3587m + 1819 n = 17	3	2	3	2.1.3
5.	Using prime factorization, find the gcd and lcm of 337500 and 21600. Verify also that gcd(m,n).lcm(m,n)=mn.	2	2	3	2.1.3
6.	Examine the logical equivalence of $(p \to q) \wedge (p \to r) \equiv p \to (q \wedge r)$.	3	3	3	2.1.3

7.	Write down the converse, inverse and contra-positive form of $p \rightarrow q$.	**1**	**3**	**3**	**2.1.3**
8.	Without using truth table prove that $q \vee (p \wedge \neg q) \vee (\neg p \wedge \neg q)$ is a tautology.	**3**	**3**	**3**	**2.1.3**
9.	Using principle of mathematical induction prove that $n! \geq 2^{n-1}$ for all $n \in \mathbb{N}$.	**2**	**3**	**3**	**2.1.3**
10.	Show that s is a valid conclusion from the premises $p \rightarrow \neg q, q \vee r, \neg s \rightarrow p, \neg r$	**4**	**3**	**3**	**2.1.3**