

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY**(AUTONOMOUS)**

II B. Tech II Sem – Semester End Examinations – Regular – July 2022

DISCRETE MATHEMATICS**[R204GA05401]**

(Common to CSE, CSD & CSM)

Time: 3 hours**Max. Marks: 60****PART-A**

(Compulsory Question)

1		Answer the following: (5 X 02 = 10 Marks)
	a)	Define predicates.
	b)	Define functions.
	c)	Find the GCD of 826, 1890.
	d)	Define combinations. Give an example.
	e)	How many edges are there in a graph with 10 vertices each of degree 6?

PART-B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT-1

2	a)	Explain the law of duality with an example.	[5M]
	b)	Explain the well - formed formulas with an example.	[5M]

OR

3	Obtain the principal disjunctive normal form of $(\neg P \wedge Q)$ and $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$.	[10M]
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UNIT-2

4	Explain relation matrix and digraph with an example.	[10M]
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OR

5	a)	Show that functions $f(x)=x^3$, $g(x)=x^{1/3}$ for $x \in \mathbb{R}$, are inverse of one another.	[5M]
	b)	Show that $f(x, y) = x + y$ is primitive recursive.	[5M]

UNIT-3

6	Let G_1 and G_2 be subgroups of a group G , show that $G_1 \cap G_2$ is also a subgroup of G and Is $G_1 \cup G_2$ is always a subgroup of G .	[10M]
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OR

7	Explain division theorem. Give an example.	[10M]
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UNIT-4

8	Explain the circular permutations. Give an example.	[10M]
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OR

9	Explain the multinomial theorem. Give an example.	[10M]
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UNIT-5		
10	Explain the matrix representation of graphs with example.	[10M]
	OR	
11	a) State and explain four color theorem with example.	[5M]
	b) Prove that a connected graph G is Euler if and only if all the vertices of G are even degree.	[5M]
