Hall Ticket No.: | | | | | | | | | | |

SRIT R20

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

II B. Tech II Sem – Semester End Examinations – Regular – July 2021

DISCRETE MATHEMATICS

[R204GA05401]

(Common to CSE, CSD & CSM)

Time: 3 hours **Max. Marks: 60**

PART-A

(Compulsory Question)

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1		Answer the following: (5 X 02 = 10 Marks)	
	a)	Define tautology and contradiction.	
	b)	Define absolute complement and relative complement.	
	c)	What do you mean by group isomorphism? Give an example.	
	d)	In how many ways can a hand of 5 cards be selected from a deck of 52 cards?	
	e)	Define planar graph. Give an example.	
		PART-B (Answer all five units, 5 X 10 = 50 Marks)	
		UNIT-1	
2	a)	Show that S V R is tautologically implied by (P∨Q) ∧ (P →R) ∧ (Q →S).	**[5M]**
	b)	Obtain the principal conjunctive normal form of the formula given by (¬ P→R)∧(Q↔P)	**[5M]**
		OR	
3		Explain the inference theory for predicate calculus.	**[10M]**
		UNIT-2	
4		What is relation? Explain the properties of binary relations with examples.	**[10M]**
		OR	
5	a)	Explain the bijective function. Give an example.	**[5M]**
	b)	Explain the inverse function. Give an example.	**[5M]**
		UNIT-3	
6	a)	Prove that a subset S ≠ Φ of G is a subgroup of < G, * >, if any pair of elements a, b ∈ S, a * b^{-1} ∈ S.	**[5M]**
	b)	Show that every cyclic group of order n is isomorphic to the group < Zn, tn>.	**[5M]**
		OR	
7		Explain the testing for prime numbers with an example.	**[10M]**
		UNIT-4	
8		Explain the enumerating permutations with constrained repetitions.	**[10M]**

		OR	
9		State and prove binomial theorem.	**[10M]**
		UNIT-5	
10	a)	Prove that the complete graph of 5 vertices is non-planar.	**[5M]**
	b)	Show that a connected graph ‘G’ with ‘n’ vertices has at least ‘n-1’ edges.	**[5M]**
		OR	
11	a)	When it can be said that two graphs G1 and G2 are isomorphic?	**[5M]**
	b)	Explain the krushkal’s algorithm with an example.	**[5M]**

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