



Srinivasa Ramanujan Institute of Technology

(AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

1. COURSE DETAILS:

Course Title:	Discrete Mathematics				Course Code:	R204GA05401
Class & Sem:	II B. Tech II Sem - Sec - A&B				Regulations:	SRIT R20
Course Structure:	Theory	Tutorial	Lab	Credits	Core/Elective:	Core
	3	1	-	3		
Instructor 1:	Mr. M. Narasimhulu			AY:	2022-23	



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Department of Computer Science and Engineering

2. UNIVERSITY CALENDAR:



Srinivasa Ramanujan Institute of Technology (AUTONOMOUS)

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ACADEMIC CALENDAR

II B.Tech II Semester (A.Y:2022-2023)
(for 2021 admitted batch)

REGULATIONS: SRIT R20

Description	Duration	# Weeks/Days
I Spell of Instructions	27.02.2023 to 23.04.2023	8 Weeks
Continuous Internal Examinations-I	24.04.2023 to 30.04.2023	1 Week
II Spell of Instructions	01.05.2023 to 18.06.2023	7 Weeks
Continuous Internal Examinations-II	19.06.2023 to 25.06.2023	1 Week
Semester End Examinations - Practicals	26.06.2023 to 05.07.2023	10 Days
Semester End Examinations - Theory	06.07.2023 to 16.07.2023	2 Weeks
Commencement of class work for III B.Tech I Semester for the AY 2023-2024		31.07.2023

Controller of Examinations
Controller of Examinations
Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701, A.P.

Principal
Principal
Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701, A.P.

Copy to:
HODs, Principal, Academic Section, Exam Section



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3. TIME TABLE: CSE-A & B

 **SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY**
(Autonomous)
Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515701.
Department of Computer Science and Engineering

Class : II B.Tech II Sem Sec - A				TIME TABLE				Academic Year: 2022-23 Room No: B-26 WEF: 27/02/2023				
Periods Day		P1 9.30-10.20	P2 10.20-11-10	Break		P3 11.20-12.10	P4 12.10-1.00	Lunch		P5 2.00-2.50	P6 2.50-3.40	P7 3.40-4.30
Mon		DM	PP LAB			PP LAB			DAA	FLAT	DLD	
Tue		DAA	DLD			LIB	FLAT		DM	DLD	IC	
Wed		FLAT	DLD			PP	DAA		DAA LAB			
Thu		PP	FLAT			DAA	PP		DM	DM	DAA	
Fri		PP	DM			PP	FLAT		LP LAB			

S. No.	Subject Code	Subject	Short Name	Faculty Name
1	R204GA05401	Discrete Mathematics	DM	Mr. M. Narasimhulu
2	R204GA05402	Formal Languages and Automata Theory	FLAT	Mrs. G. Nagaleela
3	R204GA05403	Python Programming	PP	Ms. Jeewana Jyothi
4	R204GA05404	Design and Analysis of Algorithms	DAA	Mrs. M. Soumya
5	R204GA04407	Digital Logic Design	DLD	Ms. V. Jyothi
6	R204GA05405	Python Programming Lab	PP LAB	Ms. Jeewana Jyothi/Mrs. G. Nagaleela
7	R204GA05406	Design and Analysis of Algorithms Lab	DAA LAB	Mrs. M. Soumya/Mr. C. Lakshminath Reddy
8	R204GA05407	Linux Programming Lab	LP LAB	Mr. C. Lakshminath Reddy/Mr. G. Ganesh
9	R204GA5MC02	Indian Constitution(HS)	IC	Mr. K. Satish Kumar
10	R204GA05408	Skill oriented course-II	SOC-II	Mrs. G. Nagaleela
12		Library	LJB	Mrs. M. Soumya

 
 INCHARGE Director of Computer Science Engineering,
SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS),
 Ananthapuramu - 515 701.

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Department of Computer Science and Engineering

Class : II B.Tech II Sem Sec- B				TIME TABLE				Academic Year: 2022-23 Room No:B-27 WEF: 27/02/2023.				
Periods Day		P1 9.30-10.20	P2 10.20-11-10	Break		P3 11.20-12.10	P4 12.10-1.00	Lunch		P5 2.00-2.50	P6 2.50-3.40	P7 3.40-4.30
Mon		FLAT	DAA			DM	DAA		PP	DLD	IC	
Tue		PP	FLAT			DLD	PP		DLD	DAA	DM	
Wed		DLD	LP LAB			LP LAB			DM	FLAT	PP	
Thu		DAA	LIB			FLAT	DAA		PP LAB			
Fri		DM	DAA LAB			DAA LAB			DM	PP	FLAT	

S. No.	Subject Code	Subject	Short Name	Faculty Name
1	R204GA05401	Discrete Mathematics	DM	Mr. M. Narasimhulu
2	R204GA05402	Formal Languages and Automata Theory	FLAT	Mrs. G. Nagaleela
3	R204GA05403	Python Programming	PP	Ms. Jeewana Jyothi
4	R204GA05404	Design and Analysis of Algorithms	DAA	Mrs. M. Soumya
5	R204GA04407	Digital Logic Design	DLD	Ms. V. Jyothi
6	R204GA05405	Python Programming Lab	PP LAB	Ms. Jeewana Jyothi/Mrs. G. Nagaleela
7	R204GA05406	Design and Analysis of Algorithms Lab	DAA LAB	Mrs. M. Soumya/Mr. C. Lakshminath Reddy
8	R204GA05407	Linux Programming Lab	LP LAB	Mr. C. Lakshminath Reddy/Mr. G. Ganesh
9	R204GA5MC02	Indian Constitution(HS)	IC	Mr. K. Satish Kumar
10	R204GA05408	Skill oriented course-II	SOC-II	Mrs. G. Nagaleela
12		Library	LJB	Ms. Jeewana Jyothi

 
 INCHARGE Director of Computer Science Engineering,



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Department of Computer Science and Engineering

4. LIST OF STUDENTS:

II -II CSE - A:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	S.NO.	ROLL NO.	NAME OF THE CANDIDATE
1	214G1A0501	ABDUL KHADIRI K	23	214G1A0537	HEMANTH KUMAR RAO M
2	214G1A0502	ABHISHEK B S	38	214G1A0538	JAHNAVI D
3	214G1A0503	AL FARHEEN P	39	214G1A0539	JAHNAVI E
4	214G1A0504	AMBICA C	40	214G1A0540	JASWANTH REDDY M
5	214G1A0505	ANIL KUMAR B	41	214G1A0541	KAVITHA S
6	214G1A0506	ARJUNESWARA RAO K	42	214G1A0542	KEERTHANA V
7	214G1A0507	ASWARTHA REDDY S	43	214G1A0543	KEERTHI REDDY K
8	214G1A0508	AYESHA K	44	214G1A0544	KIRANMAYEE SAI T
9	214G1A0509	AYUB S	45	214G1A0545	KOUSHIK G
10	214G1A0510	BANU BEE S	46	214G1A0546	KUSUMA K
11	214G1A0511	BHANUCHAND C	47	214G1A0547	LAKSHMI NARASIMHA REDDY G
12	214G1A0512	BHARATHI B	48	214G1A0548	BHANU PRAKASH B
13	214G1A0513	BHAVANA Y	49	214G1A0549	LAVANYA P
14	214G1A0514	BHUMIKA B	50	214G1A0550	LIKHITHA D
15	214G1A0515	BINDU D	51	214G1A0551	LINGARAJU M
16	214G1A0516	CHAITRA Y	52	214G1A0552	LOKESH B
17	214G1A0517	CHANDRA LEKHA C	53	214G1A0553	LOUKYANJALI E
18	214G1A0518	DEEPIKA T	54	214G1A0554	MAHESH BABU M
19	214G1A0519	DHANA LAKSHMI A	55	214G1A0555	MANASA B
20	214G1A0520	DINESH NAIK S	56	214G1A0556	MANIDEEP SAI Y
21	214G1A0521	DIVYA SAI R	57	214G1A0557	MEENAKSHI B
22	214G1A0522	DIVYA SREE B	58	214G1A0558	MOHAMMAD FAIZAAN SHAIK P
23	214G1A0523	DIVYA SREE K	59	214G1A0559	MOHAMMAD MANSOOR K
24	214G1A0524	DURGA BHAVANI V	60	214G1A0560	MOHAMMED FAYAZ B
25	214G1A0525	DURGA P	61	214G1A0561	MOUNIKA A C
26	214G1A0526	EZAAZ BASHA U	62	214G1A0562	MOUNIKA V
27	214G1A0527	GANESH D	63	214G1A0563	MYTHReya REDDY C
28	214G1A0528	GANESH G	64	224G5A0501	ANILA R
29	214G1A0529	GAYATHRI M	65	224G5A0502	CHANDRASEKHAR R
30	214G1A0530	GEETHA SERI L	66	224G5A0503	D PURUSHOTHAM
31	214G1A0531	GOWTHAMI M	67	224G5A0504	DEEPIKA SREE S
32	214G1A0532	HEMA LATHA D	68	224G5A0505	GOVARDHINI GOWD G
33	214G1A0533	HARSHA VARDHAN M	69	224G5A0506	HEMALATHA M
34	214G1A0534	HARSHA VARDHAN P	70	224G5A0507	JEEVAN KUMAR D
35	214G1A0535	HARSHIKA K	71	224G5A0508	KUSUMA K
36	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	72	224G5A0509	NANDITHA J



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Department of Computer Science and Engineering

II -II CSE – B:

S. NO.	ROLL NO.	NAME OF THE CANDIDATE	S. NO.	ROLL NO.	NAME OF THE CANDIDATE
1	214G1A0564	NADIRA ANJUM J	37	214G1A05A0	SHEEBA SHAIK G
2	214G1A0565	NAGA SHRAVAN B	38	214G1A05A1	SIREESHA P
3	214G1A0566	NAGATEJADEEP REDDY B	39	214G1A05A2	SIVA MANIKANTA B
4	214G1A0567	NANDHINI M	40	214G1A05A3	SNEHALATHA D
5	214G1A0568	NANDINI B	41	214G1A05A4	SOBITHA RANI G
6	214G1A0569	NARENDRA M	42	214G1A05A5	SREEJA REDDY P
7	214G1A0570	NAVADEEP REDDY V	43	214G1A05A6	SUJITH A
8	214G1A0571	NAVYASREE S	44	214G1A05A7	SUMMIYA K
9	214G1A0572	NEERAJ P	45	214G1A05A8	SUNIL KUMAR K
10	214G1A0573	NEHA A	46	214G1A05A9	SURENDRA GOUD E
11	214G1A0574	PALLAVI B	47	214G1A05B0	SURYA TEJA D
12	214G1A0575	PALLAVI M (MANNELA)	48	214G1A05B1	TARUN K
13	214G1A0576	PALLAVI M (MEENUGA)	49	214G1A05B2	THRISHA A
14	214G1A0577	PAVITRA K	50	214G1A05B3	THRISHA P
15	214G1A0578	PRABHAS REDDY R	51	214G1A05B4	UDAYASREE S
16	214G1A0579	PRASHANTH KUMAR REDDY P	52	214G1A05B5	VANITHA G
17	214G1A0580	PUJAN KUMAR M	53	214G1A05B6	VARSHITHA B
18	214G1A0581	RAMYASREE G	54	214G1A05B7	VARSHITHA REDDY B
19	214G1A0582	RANGA SAHITHI C	55	214G1A05B8	VARUN KUMAR REDDY B
20	214G1A0583	RAVITEJA M	56	214G1A05B9	VISWATEJA D
21	214G1A0584	REVATHI B	57	214G1A05C0	VYSHNAVI G
22	214G1A0585	SAI DHANUSH D	58	214G1A05C1	VYSHNAVI M
23	214G1A0586	SAI HARITHA G	59	214G1A05C2	YASASWINI P
24	214G1A0587	SAI JAHNAVI G	60	214G1A05C3	YASHEELA G
25	214G1A0588	SAI MEGHANA REDDY G	61	214G1A05C4	BINDU SAI S
26	214G1A0589	SAI PAVANI M	62	214G1A05C5	PAVAN KUMAR REDDY K
27	214G1A0590	SAI PRASANNA C	63	214G1A05C6	SHILPA M
28	214G1A0591	SAI PREETHIKA G	64	214G1A05C7	SREYA Y
29	214G1A0592	SAI SARANYA P	65	214G1A05C8	UDAY KUMAR L
30	214G1A0593	SAMHITHA S	66	214G1A05C9	SUPREETH KUMAR REDDY U
31	214G1A0594	SAMYU J N	67	224G5A0510	SAI SHANMUKHI N
32	214G1A0595	SASI VARUN KUMAR REDDY B	68	224G5A0511	SHABHAREESH A
33	214G1A0596	SHAGUPTHA NAAZ D	69	224G5A0512	SHAFIULLA K
34	214G1A0597	SHARAN KUMAR C	70	224G5A0513	SHRAVAN KUMAR REDDY A
35	214G1A0598	SHARON MELORA ANGEL Z	71	224G5A0514	TARUN KUMAR REDDY P
36	214G1A0599	SHASHIKALA B	72	224G5A0515	VENKATA RANJITH KUMAR REDDY P



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5. Syllabus:

1. **Prerequisites:** A higher education mathematics is required to study this course.
2. **Course Description:** This course will introduce and illustrate the elementary discrete mathematics for computer science and engineering students. To equip the students with standard concepts like formal logic notation, methods of proof, induction, sets, relations, graph theory, permutations and combinations, counting principles.

3. Detailed Syllabus:

UNIT 1: Mathematical Logic (11 Periods)

Propositional Calculus: Statements and Notations, Connectives, Well Formed Formulas, Truth Tables, Tautologies, Equivalence of Formulas, Duality Law, Tautological Implications, Normal Forms, Theory of Inference for Statement Calculus, Consistency of Premises, Indirect Method of Proof.

Predicate Calculus: Predicative Logic, Statement Functions, Variables and Quantifiers, Free and Bound Variables, Inference Theory for Predicate Calculus.

UNIT 2: Set Theory (15 Periods)

Introduction: Operations on Binary Sets, Principle of Inclusion and Exclusion, Relations: Properties of Binary Relations, Relation Matrix and Digraph, Operations on Relations, Partition and Covering, Transitive Closure, Equivalence, Compatibility and Partial Ordering Relations, Hasse Diagrams.

Functions: Bijective Functions, Composition of Functions, Inverse Functions, Permutation Functions, Recursive Functions, Lattice and its Properties.

UNIT 3: Algebraic Structures and Number Theory (14 Periods)

Algebraic Structures: Algebraic Systems, Examples, General Properties, Semi Groups and Monoids, Homomorphism of Semi Groups and Monoids, Group, Subgroup, Abelian Group, Homomorphism, Isomorphism.

Number Theory: Properties of Integers, Division Theorem, The Greatest Common Divisor, Euclidean Algorithm, Least Common Multiple, Testing for Prime Numbers, The Fundamental Theorem of Arithmetic, Modular Arithmetic (Fermat's Theorem and Euler's Theorem).

UNIT 4: Combinatorics (11 Periods)

Basic of Counting, Permutations, Permutations with Repetitions, Circular Permutations, Restricted Permutations, Combinations, Restricted Combinations, Generating Functions of Permutations and Combinations, Binomial and Multinomial Coefficients, Binomial and Multinomial Theorems, The Principles of Inclusion–Exclusion, Pigeonhole Principle and its Application.

UNIT 5: Graph Theory (12 Periods)

Basic Concepts of Graphs, Sub graphs, Matrix Representation of Graphs: Adjacency Matrices, Incidence Matrices, Isomorphic Graphs, Paths and Circuits, Eulerian and Hamiltonian Graphs, Multigraphs, Planar Graphs, Euler's Formula, Graph Coloring and Covering, Chromatic Number, Spanning Trees, Algorithms for Spanning Trees.

Total Periods: 62



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4. Text Books:

1. Discrete Mathematical Structures with Applications to Computer Science, J. P. Tremblay and P. Manohar, Tata McGraw Hill, 2015.
2. Elements of Discrete Mathematics-A Computer Oriented Approach, C. L. Liu and D. P. Mohapatra, 3rd Edition, Tata McGraw Hill, 2008.

5. Reference Books

1. Advanced Engineering Mathematics, by Erwin Kreyszig, 10th Edition, Wiley India, 2014.
2. Higher Engineering Mathematics, by B.V.Ramana, Sixth Reprint, Mc Graw Hill publishers, 2008.
3. Advanced Engineering Mathematics, by Alan Jeffrey, 1st Edition, Elsevier, 2010.



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6. Course Outcomes:

On successful completion of this course, the students will be able to

CO	Course Outcomes	Cognitive Level
At the end of this course the students will be able to:		
1	Illustrate discrete mathematic components like statements, logic, sets, structures, numbers and combinatorics.	Understand
2	Evaluate and simplify propositional and predicate calculus using inference theory.	Apply
3	Perform the operations on Sets, Relations and functions and their properties.	Apply
4	Identify algebraic systems and use general properties on number theory.	Apply
5	Use combinatorics solving the counting problems.	Apply
6	Use graph algorithms for representing, identifying, generating and evaluating the Graphs.	Apply

6.1 Course Assessment & Evaluation:

Mode of assessment	Frequency	Marks
Mid-Term Examinations (Internal)	Two exams CIE-1 and CIE-2 will be conducted. The consolidated CIE marks will be arrived by considering the marks secured by the student in both the CIEs with 80% weightage given to the better CIE and 20% to the other. For each theory course, during the semester, there shall be two CAAs. Each CAA will be evaluated for 10 marks. The consolidated CAA marks will be arrived by considering the average of marks secured by the student in both the CAAs. The final marks for CIA (for 40 marks) = Consolidated CIE marks (for 30 marks) + Consolidated CAA marks (for 10 marks)	40
University Examinations (External)	Once	60
Total		100

6.2.1 Mapping(X) of Course Outcomes with Program Outcomes & Program Specific Outcomes:



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CO/P O	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1														X	
CO2	X													X	
CO3	X													X	
CO4	X													X	
CO5	X													X	
CO6	X													X	

6.2.2 Program outcomes and Program Specific Outcomes:

CO/P O	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1															
CO2	2													1	
CO3	2													1	
CO4	2													1	
CO5	2													1	
CO6	2													1	

6.3 Targets for CO Attainment:

Target Vs Attained – Course Outcomes			
Course Outcomes	Target Level (%)	Attained Level (%)	Remarks and Recommendations
CO1	75		
CO2	75		
CO3	75		
CO4	75		
CO5	75		
CO6	75		



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7. Lesson Plan:

**(Mode of delivery: Chalk & Talk, ICT, Group Discussion, Demonstration, Tutorial, Industrial Visit, Seminar)*

II -II CSE - A:

Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
UNIT 1: Mathematical Logic					
1	Statements and Notations	C&T	1	T1	28-02-23
2	Connectives, Well Formed Formulas	C&T, ICT	1	T1	2-03-23
3	Truth Tables, Tautologies	C&T	1	T1	2-03-23
4	Equivalence of Formulas, Duality Law	ICT	1	T1	3-03-23
5	Tautological Implications	C&T	1	T1	6-03-23
6	Normal Forms	C&T	1	T1	7-03-23
7	Theory of Inference for Statement Calculus, Consistency of Premises	ICT	1	T1	9-03-23
8	Indirect Method of Proof	C&T	1	T1	10-03-23
9	Predicative Logic, Statement Functions	ICT	1	T1	13-03-23
10	Variables and Quantifiers, Free and Bound Variables	ICT	1	T1	13-03-23
11	Inference Theory for Predicate Calculus.	C&T	1	T1	14-03-23
Total Periods required for Unit-1			11		
UNIT 2: Set Theory					
12	Operations on Binary Sets	C&T	2	T1	16-03-23
13	Principle of Inclusion and Exclusion	ICT	1	T1	17-03-23
14	Properties of Binary Relations	ICT	1	T1	20-03-23
15	Relation Matrix and Digraph	C&T	1	T1	21-03-23
16	Operations on Relations, Partition and Covering	ICT	1	T1	23-03-23
17	Transitive Closure	C&T	1	T1	23-03-23
18	Equivalence	ICT	1	T1	24-03-23
19	Compatibility and Partial Ordering Relations	ICT	1	T1	27-03-23
20	Hasse Diagrams	C&T	1	T1	28-03-23
21	Bijective Functions, Composition of Functions	ICT	1	T1	3-04-23
22	Inverse Functions	C&T	1	T1	6-04-23
23	Permutation Functions	C&T	1	T1	6-04-23
24	Recursive Functions	C&T	1	T1	10-04-23
25	Lattice and its Properties	C&T	1	T1	11-04-23
Total Classes required for Unit-2			15		
UNIT 3: Algebraic Structures and Number Theory					



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Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
26	Algebraic Systems	ICT	1	T1	13-04-23
27	Examples,	ICT	1	T1	13-04-23
28	General Properties	ICT	1	T1	14-04-23
29	Semi Groups and Monoids	ICT	½	T1	17-04-23
30	Homomorphism of Semi Groups and Monoids	ICT	½	T1	17-04-23
31	Group, Subgroup	ICT	1	T1	18-04-23
32	Abelian Group, Homomorphism	ICT	1	T1	20-04-23
33	Isomorphism.	ICT	1	T1	20-04-23
34	Properties of Integers	ICT	1	T1	21-04-23
35	Division Theorem, The Greatest Common Divisor	ICT	1	T1	1-05-23
36	Euclidean Algorithm, Least Common Multiple	C&T	2	T1	4-05-23
37	Testing for Prime Numbers	ICT	1	T1	5-05-23
	The Fundamental Theorem of Arithmetic	ICT	1	T1	8-05-23
	Modular Arithmetic (Fermat's Theorem and Euler's Theorem).	ICT	1	T1	9-05-23
Total Classes required for Unit-3				14	
UNIT 4: Combinatorics					
38	Basic of Counting, Permutations	C&T	1	T1	11-05-23
39	Permutations with Repetitions	C&T	1	T1	11-05-23
40	Circular Permutations	C&T	1	T1	12-05-23
41	Restricted Permutations	ICT	1	T1	12-05-23
42	Combinations, Restricted Combinations	ICT	1	T1	16-05-23
43	Generating Functions of Permutations and Combinations	ICT	1	T1	18-05-23
44	Binomial and Multinomial Coefficients	ICT	1	T1	18-05-23
45	Binomial and Multinomial Theorems	ICT	1	T1	19-05-23
46	The Principles of Inclusion–Exclusion	ICT	1	T1	22-05-23
47	Pigeonhole Principle and its Application	C&T	2	T1	22-05-23
Total Classes required for Unit-4				11	
UNIT 5: Graph Theory					
48	Basic Concepts of Graphs, Sub graphs	C&T	½	T1	26-05-23
49	Matrix Representation of Graphs	C&T	½	T1	26-05-23
50	Adjacency Matrices	C&T	½	T1	29-05-23
51	Incidence Matrices,	C&T	½	T1	29-05-23
52	Isomorphic Graphs	C&T	1	T1	30-05-23
53	Paths and Circuits	ICT	1	T1	1-06-23
54	Eulerian and Hamiltonian Graphs	ICT	1	T1	1-06-23
55	Multigraphs, Planar Graphs,	ICT	1	T1	2-06-23
56	Euler's Formula	ICT	1	T1	5-06-23



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
57	Graph Coloring and Covering	C&T	1	T1	6-06-23
58	Chromatic Number	C&T	1	T1	8-06-23
58	Spanning Trees	ICT	1	T1	8-06-23
59	Algorithms for Spanning Trees.	ICT	1	T1	9-06-23
Total Classes required for Unit-5			11		
Total Number of Classes Required : 62+3=65					

II -II CSE - B:

**(Mode of delivery: Chalk & Talk, ICT, Group Discussion, Demonstration, Tutorial, Industrial Visit, Seminar)*

Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
UNIT 1: Mathematical Logic					
1	Statements and Notations	C&T	1	T1	28-02-23
2	Connectives, Well Formed Formulas	C&T, ICT	1	T1	1-03-23
3	Truth Tables, Tautologies	C&T	1	T1	3-03-23
4	Equivalence of Formulas, Duality Law	ICT	1	T1	3-03-23
5	Tautological Implications	C&T	1	T1	6-03-23
6	Normal Forms	C&T	1	T1	7-03-23
7	Theory of Inference for Statement Calculus, Consistency of Premises	ICT	1	T1	10-03-23
8	Indirect Method of Proof	C&T	1	T1	10-03-23
9	Predicative Logic, Statement Functions	ICT	1	T1	13-03-23
10	Variables and Quantifiers, Free and Bound Variables	ICT	1	T1	14-03-23
11	Inference Theory for Predicate Calculus.	C&T	1	T1	15-03-23
Total Periods required for Unit-1			11		
UNIT 2: Set Theory					
12	Operations on Binary Sets	C&T	2	T1	17-03-23
13	Principle of Inclusion and Exclusion	ICT	1	T1	20-03-23
14	Properties of Binary Relations	ICT	1	T1	21-03-23
15	Relation Matrix and Digraph	C&T	1	T1	24-03-23
16	Operations on Relations, Partition and Covering	ICT	1	T1	24-03-23
17	Transitive Closure	C&T	1	T1	27-03-23
18	Equivalence	ICT	1	T1	28-03-23
19	Compatibility and Partial Ordering Relations	ICT	1	T1	29-03-23
20	Hasse Diagrams	C&T	1	T1	31-03-23



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Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
21	Bijective Functions, Composition of Functions	ICT	1	T1	31-03-23
22	Inverse Functions	C&T	1	T1	3-04-23
23	Permutation Functions	C&T	1	T1	3-04-23
24	Recursive Functions	C&T	1	T1	5-04-23
25	Lattice and its Properties	C&T	1	T1	10-04-23
Total Classes required for Unit-2			15		
UNIT 3: Algebraic Structures and Number Theory					
26	Algebraic Systems	ICT	1	T1	11-4-23
27	Examples,	ICT	1	T1	12-04-23
28	General Properties	ICT	1	T1	14-04-23
29	Semi Groups and Monoids	ICT	½	T1	14-04-23
30	Homomorphism of Semi Groups and Monoids	ICT	½	T1	14-04-23
31	Group, Subgroup	ICT	1	T1	17-04-23
32	Abelian Group, Homomorphism	ICT	1	T1	18-04-23
33	Isomorphism.	ICT	1	T1	19-04-23
34	Properties of Integers	ICT	1	T1	21-04-23
35	Division Theorem, The Greatest Common Divisor	ICT	1	T1	21-04-23
36	Euclidean Algorithm, Least Common Multiple	C&T	2	T1	1-05-23
37	Testing for Prime Numbers	ICT	1	T1	3-05-23
	The Fundamental Theorem of Arithmetic	ICT	1	T1	5-05-23
	Modular Arithmetic (Fermat's Theorem and Euler's Theorem).	ICT	1	T1	5-05-23
Total Classes required for Unit-3			14		
UNIT 4: Combinatorics					
38	Basic of Counting, Permutations	C&T	1	T1	8-05-23
39	Permutations with Repetitions	C&T	1	T1	9-05-23
40	Circular Permutations	C&T	1	T1	10-05-23
41	Restricted Permutations	ICT	1	T1	12-05-23
42	Combinations, Restricted Combinations	ICT	1	T1	12-05-23
43	Generating Functions of Permutations and Combinations	ICT	1	T1	15-05-23
44	Binomial and Multinomial Coefficients	ICT	1	T1	16-05-23
45	Binomial and Multinomial Theorems	ICT	1	T1	17-05-23
46	The Principles of Inclusion–Exclusion	ICT	1	T1	19-05-23
47	Pigeonhole Principle and its Application	C&T	2	T1	19-05-23
Total Classes required for Unit-4			11		
UNIT 5: Graph Theory					
48	Basic Concepts of Graphs, Sub graphs	C&T	½	T1	22-05-23
49	Matrix Representation of Graphs	C&T	½	T1	22-05-23



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Sr. No.	Topics to be covered	Mode of Delivery	Periods Required	Books followed	Scheduled Date
50	Adjacency Matrices	C&T	½	T1	23-05-23
51	Incidence Matrices,	C&T	½	T1	23-05-23
52	Isomorphic Graphs	C&T	1	T1	24-05-23
53	Paths and Circuits	ICT	1	T1	26-05-23
54	Eulerian and Hamiltonian Graphs	ICT	1	T1	26-05-23
55	Multigraphs, Planar Graphs,	ICT	1	T1	29-05-23
56	Euler's Formula	ICT	1	T1	30-05-23
57	Graph Coloring and Covering	C&T	1	T1	31-05-23
58	Chromatic Number	C&T	1	T1	01-06-23
59	Spanning Trees	ICT	1	T1	5-06-23
Algorithms for Spanning Trees.			ICT	1	6-06-23
Total Classes required for Unit-5				11	
Total Number of Classes Required : 62+3=65					



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8. Additional Topics:

Sr. No.	Topic	Course Outcome
1	Contradiction and Contingency	CO1
2	Closures of Relations	CO2
3	Planar Graph Vs Non-Planar Graphs	CO6
4	Trees	CO6
5	walks, Regions	CO6



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9. Descriptive Question Bank: - Unit Wise

UNIT - 1 (2 Marks)			
#	Questions	CO	BL
1	Construct the truth table $\neg (\neg P \vee \neg Q)$.	CO1	Understand
2	What is Conjunction. Give an example.	CO1	Remember
3	Show that the formula $Q \vee (P \wedge \neg Q) \vee (\neg P \wedge Q)$ is a tautology.	CO1	Remember
4	Define Disjunction. Give an example.	CO1	Remember
5	What is the negation of statement, "2 is even and -3 is negative"?	CO1	Remember
6	Define predicates.	CO1	Remember
7	Define tautology and contradiction.	CO1	Remember
8	Show that the propositions $P \rightarrow Q$ and $\neg P \vee Q$ are logically equivalent.	CO1	Remember
9	Construct the truth table for $(P \wedge Q) \vee (Q \wedge R) \vee (P \wedge \neg R)$.	CO1	Understand
10	Define law of duality.	CO1	Remember

UNIT - 1 (5/10 Marks)				
#	Questions	M	CO	BL
1	Obtain the principal conjunctive normal form of the formula S given by $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$.	5	CO2	Apply
2	Show that $(R \vee S)$ follows logically from the premises $(C \vee D), (C \vee D) \rightarrow \neg H, \neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$.	5	CO2	Apply
3	Construct the truth table for $(Q \vee (P \rightarrow Q) \rightarrow P)$.	5	CO2	Apply
4	Show that $R \vee (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.	5	CO2	Apply
5	Obtain the principal disjunctive normal form of $(\neg P \wedge Q)$ and $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$.	10	CO2	Apply
6	Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$.	5	CO2	Apply
7	Explain the conjunctive normal form.	5	CO2	Understand
8	Explain the well-formed formulas with an example.	5	CO2	Apply
9	Explain disjunctive normal Form.	5	CO2	Understand
10	Explain the inference theory for predicate calculus.	10	CO2	Understand

UNIT - 2 (2 Marks)			
#	Questions	CO	BL
1	Define the Power set. Give an example.	CO1	Remember
2	Define Inclusion and equality of sets.	CO1	Remember
3	What is relative complement and absolute complement.	CO1	Remember
4	Given $A = \{2, 5, 6\}$, $B = \{3, 4, 2\}$, $C = \{1, 3, 4\}$, find $A - B$ and $B - A$. Show that $A - B \neq B - A$ and $A - C = A$.	CO1	Understand
5	What is universal set and null set.	CO1	Remember
6	Define inverse function.	CO1	Remember



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UNIT – 2 (2 Marks)			
#	Questions	CO	BL
7	Define functions.	CO1	Remember
8	Define recursive function.	CO1	Remember
9	What is composition of function?	CO1	Remember
10	Define binary relation.	CO1	Remember

UNIT – 2 (5/10 Marks)				
#	Questions	M	CO	BL
1	Explain transitive closure with an example.	5	CO3	Understand
2	Explain lattice and write its properties.	5	CO3	Understand
3	Explain the principle of inclusion and exclusion.	10	CO3	Understand
4	Explain relation matrix and digraph with an example.	10	CO3	Understand
5	What is relation? Explain the properties of binary relations with examples.	10	CO3	Understand
6	Let $X = \{ 2, 3, 6, 12, 24, 36 \}$ and the relation \leq be such that $x \leq y$ if x divides y . Draw the Hasse diagram of (X, \leq) .	5	CO3	Understand
7	Let $f(x) = x^2 - 3x + 2$, find $f(x^2)$, $f(y-x)$ and $f(x+3)$.	5	CO3	Remember
8	Show that functions $f(x) = x^3$, $g(x) = x^{1/3}$ for $x \in R$. Are inverse of each other.	5	CO3	Remember
9	Let $f(x) = x+2$, $g(x) = x-2$ and $h(x) = 3x$ for $x \in R$ where R is set of real numbers. Find $g \circ f$; $f \circ g$; $f \circ f$; $g \circ g$; $f \circ h$; $h \circ g$; $h \circ f$ and $f \circ h \circ g$.	10	CO3	Remember
10	Demonstrate the relation $a R b$ if $a \leq b$ in $\{1, 2, 3, 4\}$ by using their matrix and Digraph.	5	CO3	Apply

UNIT – 3 (2 Marks)			
#	Questions	CO	BL
1	What is an algebraic system?	CO1	Remember
2	Define abelian group.	CO1	Remember
3	If $(G, *)$ is a group and $a, b \in G$, then show that $(a * b)^{-1} = b^{-1} * a^{-1}$.	CO1	Understand
4	If $(G, *)$ is an abelian group, then for all $a, b \in G$, show that $(a * b)^n = a^n * b^n$.	CO1	Understand
5	What do you mean by group isomorphism? Give an example.	CO1	Remember
6	Define cyclic group.	CO1	Remember
7	Write the properties of integers.	CO1	Apply
8	Find the GCD of 826, 1890.	CO1	Apply



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UNIT – 3 (2 Marks)				
#	Questions	CO	BL	
9	Define LCM. Give an example.	CO1	Apply	
10	What is congruence relation. Give an example.	CO1	Apply	
UNIT – 3 (5/10 Marks)				
#	Questions	M	CO	BL
1	Show that every cyclic group of order n is isomorphic to the group $\langle Z_n, t_n \rangle$.	5	CO4	Apply
2	Prove that a subset $S \neq \Phi$ of G is a subgroup of $\langle G, * \rangle$, if any pair of elements $a, b \in S$, $a * b^{-1} \in S$.	5	CO4	Apply
3	Explain Groups, Subgroups and Normal subgroups.	10	CO4	Understand
4	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.	10	CO4	Understand
5	Explain about homomorphism.	5	CO4	Understand
6	Write the Euclidian algorithm with an example.	10	CO4	Understand
7	Explain the Fermat's theorem and Euler's theorem with an example.	10	CO4	Understand
8	Explain division theorem. Give an example.	10	CO4	Understand
9	Explain the testing for prime numbers with an example.	10	CO4	Understand
10	Define a semigroup and monoid. Give an example of a monoid which is not a group. Justify the answer.	5	CO4	Understand

UNIT – 4 (2 Marks)				
#	Questions	CO	BL	
1	Write the basic of counting principles.	CO1	Understand	
2	In how many ways can the letters of the word 'READER' be arranged?	CO1	Remember	
3	Define permutation. Give an example.	CO1	Apply	
4	Define Directed Permutation.	CO1	Remember	
5	Define combinations. Give an example.	CO1	Apply	
6	How many ways can 12 white pawns and 12 black pawns be placed on the black squares of 8 X 8 chess board?	CO1	Remember	
7	In how many ways can a hand of 5 cards be selected from a deck of 52 cards?	CO1	Remember	
UNIT – 4 (2 Marks)				
#	Questions	CO	BL	
8	From a group of professors how many ways can a committee of 5 members be formed so that at least one of professor A and professor B will be included?	CO1	Understand	
9	In how many ways can 12 of the 14 people be distributed into 3 teams where the first team has 3 members, the second has 5, and the third team has 4 members?	CO1	Remember	
10	Suppose that Florida state university has a residence hall that has 5	CO1	Understand	



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single rooms, 5double rooms, and 3 rooms for 3 students each. In how many ways can 24 students be assigned to the 13 rooms.		
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UNIT – 4 (5/10 Marks)				
#	Questions	M	CO	BL
1	Explain the permutations and combinations with an example.	10	CO5	Apply
2	Explain generating Permutation Algorithm with an example.	5	CO5	Apply
3	Suppose that 200 faculty members can speak French and 50 can speak Russian, while only 20 can speak both French and Russian. How many faculty members can speak either French or Russian.	5	CO5	Understand
4	How many different outcomes are possible by tossing 10 similar coins?	5	CO5	Remember
5	Explain the circular permutations. Give an example.	10	CO5	Apply
6	Explain the enumerating permutations with constrained repetitions.	10	CO5	Understand
7	Explain the principles of inclusion – exclusion.	10	CO5	Understand
8	Explain pigeonhole principle and its applications.	10	CO5	Understand
9	Explain the multinomial theorem. Give an example.	10	CO5	Understand
10	State and prove binomial theorem.	10	CO5	Apply
11	Find out the coefficient of x^9y^3 in the expansion of $(x+2y)^{12}$ using binomial theorem.	5	CO5	Apply
12	Find out the coefficient of $a^2b^3c^2d^5$ in the expansion of $(a+2b-3c+2d+5)^{16}$ using multinomial theorem.	5	CO5	Apply

UNIT – 5 (2 Marks)			
#	Questions	CO	BL
1	Define graph coloring. Give an example.	CO1	Understand
2	Draw the graph of $K_{2,5}$.	CO1	Understand
3	Define multigraph. Give an example.	CO1	Understand
4	Mention the importance of graph coloring.	CO1	Understand
5	How many edges are there in a graph with 10 vertices each of degree 6?	CO1	Understand
6	Find a chromatic number of bipartite graphs?	CO1	Understand
7	Define planar graph. Give an example.	CO1	Understand
8	What is bipartite graph. Give an example.	CO1	Remember
9	What do you mean by graph isomorphism, show it by example?	CO1	Understand
10	Define spanning tree.	CO1	Remember

UNIT – 5 (5/10 Marks)				
#	Questions	M	CO	BL
1	Define K- regular graph. Give examples of 2- regular, 3- regular,	10	CO6	Apply



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4- regular graphs.			
2 Prove that the complete graph of 5 vertices is non-planar.	5	C06	Apply
3 Show that a connected graph 'G' with 'n' vertices has at least 'n-1' edges.	5	C06	Understand
4 When it can be said that two graphs G1 and G2 are isomorphic?	5	C06	Remember
5 Prove that a connected graph G is Euler if and only if all the vertices of G are even degree.	5	C06	Apply
6 State and explain four color theorem with an example.	5	C06	Apply
7 Explain krushkal's algorithm with an example.	5	C06	Apply
8 Differentiate between Eulerian graph & Hamiltonian graph with example. And also give an example of a graph which is Eulerian but not Hamiltonian.	10	C06	Apply
9 Write the algorithms for spanning trees with an example.	10	C06	Apply
10 Explain the matrix representation of graphs with example.	10	C06	Apply



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10. II B.Tech II SEM – CSE A & B Continuous Alternative Assessment – 1

Answer the following questions

Total Marks-10

Q. No.	Questions	Marks	CO	Cognitive Level
Unit-I				
1	Classify Equivalence Formulas and implications.	2	CO1	Remember
2	Define PDNF and obtain Principal Disjunctive Normal Form $(\neg P \vee \neg Q) \rightarrow (P \leftrightarrow \neg Q)$.	2	CO2	Understand
Unit-II				
3	Let F_X be the set of all one to one, onto mappings from X onto X where $X = \{1, 2, 3\}$. Find all the elements of F_X and find the inverse of each element.	2	CO3	Understand
4	Illustrate Lattices and its properties.	2	CO3	Understand
Unit-III				
5	Define a semigroup and monoid. Give an example of a monoid, which is not a group. Justify the answer.	2	CO4	Understand

- Last date for submitting Assignment-1: **21-04-2023**
- Also, Put the Submitted Copy in Google Class Room once Evaluation is completed.



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10.1 CONTINUOUS ALTERNATIVE ASSESSMENT-I MARKS:

II B.Tech II SEM CSE A:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1
1	214G1A0501	ABDUL KHADIRI K	8
2	214G1A0502	ABHISHEK B S	8
3	214G1A0503	AL FARHEEN P	8
4	214G1A0504	AMBICA C	8
5	214G1A0505	ANIL KUMAR B	8
6	214G1A0506	ARJUNESWARA RAO K	6
7	214G1A0507	ASWARTHA REDDY S	9
8	214G1A0508	AYESHA K	8
9	214G1A0509	AYUB S	8
10	214G1A0510	BANU BEE S	8
11	214G1A0511	BHANUCHAND C	8
12	214G1A0512	BHARATHI B	8
13	214G1A0513	BHAVANA Y	8
14	214G1A0514	BHUMIKA B	8
15	214G1A0515	BINDU D	7
16	214G1A0516	CHAITRA Y	8
17	214G1A0517	CHANDRA LEKHA C	8
18	214G1A0518	DEEPIKA T	7
19	214G1A0519	DHANA LAKSHMI A	7
20	214G1A0520	DINESH NAIK S	8
21	214G1A0521	DIVYA SAI R	8
22	214G1A0522	DIVYA SREE B	8
23	214G1A0523	DIVYA SREE K	8
24	214G1A0524	DURGA BHAVANI V	7
25	214G1A0525	DURGA P	6
26	214G1A0526	EZAAZ BASHA U	7
27	214G1A0527	GANESH D	8
28	214G1A0528	GANESH G	8
29	214G1A0529	GAYATHRI M	8
30	214G1A0530	GEETHA SERI L	8
31	214G1A0531	GOWTHAMI M	8
32	214G1A0532	HEMA LATHA D	8
33	214G1A0533	HARSHA VARDHAN M	8
34	214G1A0534	HARSHA VARDHAN P	8
35	214G1A0535	HARSHIKA K	7
36	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	7
37	214G1A0537	HEMANTH KUMAR RAO M	8
38	214G1A0538	JAHNAVI D	8
39	214G1A0539	JAHNAVI E	8
40	214G1A0540	JASWANTH REDDY M	7
41	214G1A0541	KAVITHA S	8
42	214G1A0542	KEERTHANA V	8
43	214G1A0543	KEERTHI REDDY K	8
44	214G1A0544	KIRANMAYEE SAI T	8
45	214G1A0545	KOUSHIK G	8
46	214G1A0546	KUSUMA K	9



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1
47	214G1A0547	LAKSHMI NARASIMHA REDDY G	8
48	214G1A0548	BHANU PRAKASH B	8
49	214G1A0549	LAVANYA P	8
50	214G1A0550	LIKHITHA D	8
51	214G1A0551	LINGARAJU M	5
52	214G1A0552	LOKESH B	6
53	214G1A0553	LOUKYANJALI E	8
54	214G1A0554	MAHESH BABU M	8
55	214G1A0555	MANASA B	8
56	214G1A0556	MANIDEEP SAI Y	8
57	214G1A0557	MEENAKSHI B	8
58	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	8
59	214G1A0559	MOHAMMAD MANSOOR K	8
60	214G1A0560	MOHAMMED FAYAZ B	7
61	214G1A0561	MOUNIKA A C	8
62	214G1A0562	MOUNIKA V	8
63	214G1A0563	MYTHREYA REDDY C	6
64	224G5A0501	ANILA R	8
65	224G5A0502	CHANDRASEKHAR R	7
66	224G5A0503	D PURUSHOTHAM	8
67	224G5A0504	DEEPIKA SREE S	8
68	224G5A0505	GOVARDHINI GOWD G	8
69	224G5A0506	HEMALATHA M	7
70	224G5A0507	JEEVAN KUMAR D	8
71	224G5A0508	KUSUMA K	8
72	224G5A0509	NANDITHA J	8

II B.Tech II Sem CSE B:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1
1	214G1A0564	NADIRA ANJUM J	5
2	214G1A0565	NAGA SHRAVAN B	7
3	214G1A0566	NAGATEJA DEEP REDDY B	8
4	214G1A0567	NANDHINI M	8
5	214G1A0568	NANDINI B	5
6	214G1A0569	NARENDRA M	9
7	214G1A0570	NAVADEEP REDDY V	7
8	214G1A0571	NAVYASREE S	8
9	214G1A0572	NEERAJ P	8
10	214G1A0573	NEHA A	7
11	214G1A0574	PALLAVI B	0
12	214G1A0575	PALLAVI M (MANNELA)	8
13	214G1A0576	PALLAVI M (MEENUGA)	0
14	214G1A0577	PAVITRA K	8
15	214G1A0578	PRABHAS REDDY R	9
16	214G1A0579	PRASHANTH KUMAR REDDY P	7
17	214G1A0580	PUJAN KUMAR M	6



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1
18	214G1A0581	RAMYASREE G	7
19	214G1A0582	RANGA SAHITHI C	9
20	214G1A0583	RAVITEJA M	8
21	214G1A0584	REVATHI B	8
22	214G1A0585	SAI DHANUSH D	9
23	214G1A0586	SAI HARITHA G	8
24	214G1A0587	SAI JAHNAVI G	8
25	214G1A0588	SAI MEGHANA REDDY G	6
26	214G1A0589	SAI PAVANI M	8
27	214G1A0590	SAI PRASANNA C	8
28	214G1A0591	SAI PREETHIKA G	8
29	214G1A0592	SAI SARANYA P	7
30	214G1A0593	SAMHITHA S	7
31	214G1A0594	SAMYU J N	8
32	214G1A0595	SASI VARUN KUMAR REDDY B	8
33	214G1A0596	SHAGUPtha NAAZ D	6
34	214G1A0597	SHARAN KUMAR C	8
35	214G1A0598	SHARON MELORA ANGEL Z	8
36	214G1A0599	SHASHIKALA B	8
37	214G1A05A0	SHEeba SHAIK G	8
38	214G1A05A1	SIREESHA P	8
39	214G1A05A2	SIVA MANIKANTA B	8
40	214G1A05A3	SNEHALATHA D	8
41	214G1A05A4	SOBITHA RANI G	8
42	214G1A05A5	SREEJA REDDY P	8
43	214G1A05A6	SUJITH A	8
44	214G1A05A7	SUMMIYA K	8
45	214G1A05A8	SUNIL KUMAR K	6
46	214G1A05A9	SURENDRA GOUD E	7
47	214G1A05B0	SURYA TEJA D	8
48	214G1A05B1	TARUN K	7
49	214G1A05B2	THRISHA A	8
50	214G1A05B3	THRISHA P	8
51	214G1A05B4	UDAYASREE S	8
52	214G1A05B5	VANITHA G	8
53	214G1A05B6	VARSHITHA B	8
54	214G1A05B7	VARSHITHA REDDY B	8
55	214G1A05B8	VARUN KUMAR REDDY B	8
56	214G1A05B9	VISWATEJA D	8
57	214G1A05C0	VYSHNAVi G	5
58	214G1A05C1	VYSHNAVi M	8
59	214G1A05C2	YASASWINI P	6
60	214G1A05C3	YASHEELA G	8
61	214G1A05C4	BINDU SAI S	8
62	214G1A05C5	PAVAN KUMAR REDDY K	5
63	214G1A05C6	SHILPA M	8
64	214G1A05C7	SREYA Y	8
65	214G1A05C8	UDAY KUMAR L	8
66	214G1A05C9	SUPREETH KUMAR REDDY U	8
67	224G5A0510	SAI SHANMUKHI N	7



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Department of Computer Science and Engineering

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1
68	224G5A0511	SHABHAREESH A	8
69	224G5A0512	SHAFIULLA K	7
70	224G5A0513	SHRAVAN KUMAR REDDY A	8
71	224G5A0514	TARUN KUMAR REDDY P	9
72	224G5A0515	VENKATA RANJITH KUMAR REDDY P	8



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Department of Computer Science and Engineering

11. CIE-1 Question Paper and Scheme of Evaluation:

Hall Ticket No.:

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SRIT R20

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech II Sem – Continuous Internal Examinations I – Apr 2023 (AY: 2022-2023)

DISCRETE MATHEMATICS

[R204GA05401]

(Common to CSE, CSD & CSM)

SET – 1

Max. Marks: 30

Time: 2 hours

Answer the following questions

Q. No	Questions	Unit	Marks	CO	Cognitive Level
1	a) Construct the truth table for $(P \wedge Q) \vee (Q \wedge \neg R) \vee (P \wedge \neg R)$.	I	2	CO1	Understand
	b) Define inverse function.	II	2	CO1	Remember
	c) Define Algebraic System.	III	2	CO1	Remember
UNIT-I					
2	a) Explain the well - formed formulas with an example.	4	CO2	Understand	
	b) Illustrate Equivalence Formulas.	4	CO2	Understand	
OR					
3	a) Show that $(R \vee S)$ follows logically from the premises $(C \vee D), (C \vee D) \rightarrow \neg H, \neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$.	4	CO2	Apply	
	b) Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$.	4	CO2	Apply	
UNIT-II					
4	a) Find the transitive closure of the Relation which is represented by: $\begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{bmatrix}$	4	CO3	Apply	
	b) Demonstrate the relation $a R b$ if $a \leq b$ in $\{1, 2, 3, 4\}$ by using their matrix and Digraph.	4	CO3	Apply	
OR					
5	a) Explain the principle of inclusion and exclusion.	4	CO3	Understand	
	b) Explain the properties of binary relations with examples.	4	CO3	Understand	
UNIT-III					
6	Let $X = \{a, b\}$ and S denote the set of all mapping from X to X . Let us write $S = \{f_1, f_2, f_3, f_4\}$ where $f_1(a) = a \quad f_1(b) = b \quad f_2(a) = a \quad f_2(b) = a$ $f_3(a) = b \quad f_3(b) = b \quad f_4(a) = b \quad f_4(b) = a$ Construct Composition table for the Operation \circ	8	CO4	Apply	
	OR				



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7	Illustrate algebraic system and its properties with suitable examples.	8	CO4	Apply
---	--	---	-----	-------

Prepared by

Name of the Faculty: Mr. M. Narasimhulu, Mr. G. Chinna Pullaih , Mr. P. Ram Bayapa Reddy,

Signature of the Faculty:

Three handwritten signatures are shown side-by-side. From left to right: 1) A signature starting with 'M.' followed by a stylized 'N'. 2) A signature starting with 'G.' followed by a stylized 'C.'. 3) A signature starting with 'P.' followed by a stylized 'R.'.



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

I/II/III/IV B. Tech I / II Sem CIE - I / II Examinations - AY: 2022-23

Subject Name: Discrete Mathematics

Subject Code: R204CA05401

Name & Signature of the Examiner: Mr. Nagashankar, M.E.

Scheme of Evaluations

1(a)	P	Q	R	T _{1R}	P _{1Q} ①	Q _{1R} ②	P _{1QR} ③	① V ② V ③	- 2M
	T	T	F	T	T	T	F	T	
	T	T	F	T	T	F	T	T	
	T	F	T	F	F	F	F	F	
	T	F	F	T	F	F	T	T	
	F	T	T	F	F	T	F	T	
	F	T	F	T	F	F	F	F	
	F	F	T	F	F	F	F	F	
	F	F	F	T	F	F	F	F	

- b) An inverse function for a given function $f: A \rightarrow B$ is $f^{-1}: B \rightarrow A$. This inverse is possible only if given function is one to one correspondence. — 2M
- c) A set with having n-ary operations is called Algebraic systems. For example $\langle I, +, \times \rangle$ is an example of Algebraic System. — 2M

UNIT-I

2(a) well-formed formulae rules in formation Exploration + Examples — 4M

b) List all equivalence formulas with its equivalent description — 4M

OR

3(a) proving that RUS is tautologically complete using inference theory — 4M

b) proving SUR is tautologically by — 4M



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UNIT - 11

- 4(a) finding transitive closure either using Matrix method or Warshall's Algorithm by specifying formulas and evaluation process includes result - 4M
- b) Specifying Relation in tabular Rooster form - 1M
- Matrix & Diagraph form - 2 M
- Specifying type of Relation, (OR) - 1M
4M
- 5(a) Specifying formulas of Inclusion & Exclusion of 2 & 3 Variables - 3 M
- Explanations with suitable Example - 1 M
4M
- b) Specifying properties Reflexive, irreflexive, Symmetric, Antisymmetric, & Transitive - 1M
Explanation of each property - 2 M
Examples of each property - 1 M
4M
- 6) construction of composition table with appropriate calculations - 8 M
- of
- 7) Algebraic system explanation - 2 M
Properties of integers having Addition & multiplication - 4 M
Examples of an Algebraic System - 2 M
8M



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12. Student Feedback analysis and Action Taken - I



SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY(AUTONOMOUS) (Code: 4G)

(Autonomous)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu Dist-515701

Department of Computer Science & Engineering

FEEDBACK-I

Date:-25/04/2023

Course Title: Discrete Mathematics
Class & B.Tech, Computer Science Engineering 2/4
Sem: Semester-II- A
Instructor: NARASIMHULU M

Course Code: R204GA05401
Regulation: 20
Date: 21/04/2023 Academic Year:2022 - 2023

S.No	Parameters considered in the feedback analysis	Excellent	Very Good	Good	Fair	Poor	%
1	Systematic presentation of topics in class	10	19	17	5	0	6.67
2	Coverage of Syllabus as per the schedule	13	15	20	3	0	6.86
3	Effective usage of ICT tools in delivering the content	9	19	21	2	0	6.72
4	Understanding the subject	9	16	19	6	0	6.40
5	Effectiveness of using Google Class Room	10	20	20	1	0	6.91
6	Interaction and encouraging the students to ask questions and discusses related questions pertaining to the subject	11	21	18	0	0	7.15
7	Quality of Lecture notes/Learning materials/Recorded videos placed in the Google Class Room	13	14	22	2	0	6.86
8	Confidence level in facing the Continuous Internal Examinations/Semester End exams	11	17	18	5	0	6.67
9	Degree of acquiring the abilities expressed in course outcomes.	10	15	22	4	0	6.52
TOTAL		96	156	177	28	0	
POINTS		192	234	177	14	0	6.75
Grand Total				617			

Specific Comments by the Students:

Not getting the information clearly on the
stopper.
Explains well using examples.

Suggestions by HOD/ Principal:

good

CSE-HOD
Head

Dean of Computer Science Engineering
Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701, A.P

PRINCIPAL
PRINCIPAL

Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701, A.P



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Department of Computer Science and Engineering



SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY(AUTONOMOUS) (Code: 4G)

(Autonomous)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu Dist-515701

Department of Computer Science & Engineering

FEEDBACK-I

Date:-25/04/2023

Course Title: Discrete Mathematics

Course Code: R204GA05401

Class & B.Tech, Computer Science Engineering 2/4 Semester-
Sem: II- B

Regulation: 20

Instructor: NARASIMHULU M

Date: 21/04/2023 Academic Year:2022 -
2023

S.No	Parameters considered in the feedback analysis	Excellent	Very Good	Good	Fair	Poor	%
1	Systematic presentation of topics in class	8	6	20	5	0	6.09
2	Coverage of Syllabus as per the schedule	11	7	17	5	0	6.50
3	Effective usage of ICT tools in delivering the content	10	6	17	6	0	6.28
4	Understanding the subject	9	5	17	8	0	5.96
5	Effectiveness of using Google Class Room	11	9	15	4	0	6.73
6	Interaction and encouraging the students to ask questions and discusses related questions pertaining to the subject	11	5	16	7	0	6.28
7	Quality of Lecture notes/Learning materials/Recorded videos placed in the Google Class Room	9	6	18	5	0	6.25
8	Confidence level in facing the Continuous Internal Examinations/Semester End exams	10	4	19	6	0	6.15
9	Degree of acquiring the abilities expressed in course outcomes.	9	6	18	7	0	6.06
TOTAL		88	54	157	53	0	
POINTS		176	81	157	26.5	0	6.26
Grand Total		440.5					

Specific Comments by the Students: *not good understanding
It's new subject faculty support needed very much*

Suggestions by HOD/ Principal: *give more details on topics*

CSE-HOD
Head

Dept. of Computer Science Engineering
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Ananthapuramu - 515 701 42

PRINCIPAL
PRINCIPAL

Srinivasa Ramanujan Institute
Technology (Autonomous)
Ananthapuramu - 515 701



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Department of Computer Science and Engineering

13. Methodology to support weak students:

Student who scored less than 50% of marks in the first internal assessment test will be considered as a slow learner or weak student and for those students, remedial classes has been conducted to improve their academic performance.

Internal Marks of CIE-I

List of students for II B.Tech II-Sem CSE-A:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CIE-1
1	214G1A0501	ABDUL KHADIRI K	23
2	214G1A0502	ABHISHEK B S	13
3	214G1A0503	AL FARHEEN P	14
4	214G1A0504	AMBICA C	22
5	214G1A0505	ANIL KUMAR B	25
6	214G1A0506	ARJUNESWARA RAO K	15
7	214G1A0507	ASWARTHA REDDY S	13
8	214G1A0508	AYESHA K	26
9	214G1A0509	AYUB S	11
10	214G1A0510	BANU BEE S	21
11	214G1A0511	BHANUCHAND C	20
12	214G1A0512	BHARATHI B	25
13	214G1A0513	BHAVANA Y	24
14	214G1A0514	BHUMIKA B	21
15	214G1A0515	BINDU D	26
16	214G1A0516	CHAITRA Y	25
17	214G1A0517	CHANDRA LEKHA C	22
18	214G1A0518	DEEPIKA T	25
19	214G1A0519	DHANA LAKSHMI A	27
20	214G1A0520	DINESH NAIK S	16
21	214G1A0521	DIVYA SAI R	22
22	214G1A0522	DIVYA SREE B	18
23	214G1A0523	DIVYA SREE K	20
24	214G1A0524	DURGA BHAVANI V	12
25	214G1A0525	DURGA P	18
26	214G1A0526	EZAAZ BASHA U	14
27	214G1A0527	GANESH D	17
28	214G1A0528	GANESH G	18
29	214G1A0529	GAYATHRI M	16
30	214G1A0530	GEETHA SERI L	23
31	214G1A0531	GOWTHAMI M	22
32	214G1A0532	HEMA LATHA D	20



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Department of Computer Science and Engineering

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CIE-1
33	214G1A0533	HARSHA VARDHAN M	21
34	214G1A0534	HARSHA VARDHAN P	8
35	214G1A0535	HARSHIKA K	20
36	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	13
37	214G1A0537	HEMANTH KUMAR RAO M	17
38	214G1A0538	JAHNAVI D	26
39	214G1A0539	JAHNAVI E	17
40	214G1A0540	JASWANTH REDDY M	8
41	214G1A0541	KAVITHA S	16
42	214G1A0542	KEERTHANA V	19
43	214G1A0543	KEERTHI REDDY K	24
44	214G1A0544	KIRANMAYEE SAI T	22
45	214G1A0545	KOUSHIK G	10
46	214G1A0546	KUSUMA K	21
47	214G1A0547	LAKSHMI NARASIMHA REDDY G	3
48	214G1A0548	BHANU PRAKASH B	20
49	214G1A0549	LAVANYA P	21
50	214G1A0550	LIKHITHA D	22
51	214G1A0551	LINGARAJU M	7
52	214G1A0552	LOKESH B	14
53	214G1A0553	LOUKYANJALI E	20
54	214G1A0554	MAHESH BABU M	5
55	214G1A0555	MANASA B	25
56	214G1A0556	MANIDEEP SAI Y	13
57	214G1A0557	MEENAKSHI B	17
58	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	15
59	214G1A0559	MOHAMMAD MANSOOR K	19
60	214G1A0560	MOHAMMED FAYAZ B	16
61	214G1A0561	MOUNIKA A C	17
62	214G1A0562	MOUNIKA V	18
63	214G1A0563	MYTHREYA REDDY C	10
64	224G5A0501	ANILA R	16
65	224G5A0502	CHANDRASEKHAR R	15
66	224G5A0503	D PURUSHOTHAM	14
67	224G5A0504	DEEPIKA SREE S	21
68	224G5A0505	GOVARDHINI GOWD G	19
69	224G5A0506	HEMALATHA M	18
70	224G5A0507	JEEVAN KUMAR D	15
71	224G5A0508	KUSUMA K	21
72	224G5A0509	NANDITHA J	18



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Internal Marks of CIE-I II B.Tech II Sem CSE - B:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CIE-1
1	214G1A0564	NADIRA ANJUM J	10
2	214G1A0565	NAGA SHRAVAN B	18
3	214G1A0566	NAGATEJADEEP REDDY B	29
4	214G1A0567	NANDHINI M	21
5	214G1A0568	NANDINI B	17
6	214G1A0569	NARENDRA M	26
7	214G1A0570	NAVADEEP REDDY V	18
8	214G1A0571	NAVYASREE S	27
9	214G1A0572	NEERAJ P	22
10	214G1A0573	NEHA A	27
11	214G1A0574	PALLAVI B	16
12	214G1A0575	PALLAVI M (MANNELA)	29
13	214G1A0576	PALLAVI M (MEENUGA)	10
14	214G1A0577	PAVITRA K	16
15	214G1A0578	PRABHAS REDDY R	23
16	214G1A0579	PRASHANTH KUMAR REDDY P	22
17	214G1A0580	PUJAN KUMAR M	21
18	214G1A0581	RAMYASREE G	20
19	214G1A0582	RANGA SAHITHI C	23
20	214G1A0583	RAVITEJA M	11
21	214G1A0584	REVATHI B	16
22	214G1A0585	SAI DHANUSH D	17
23	214G1A0586	SAI HARITHA G	23
24	214G1A0587	SAI JAHNAVI G	20
25	214G1A0588	SAI MEGHANA REDDY G	16
26	214G1A0589	SAI PAVANI M	17
27	214G1A0590	SAI PRASANNA C	12
28	214G1A0591	SAI PREETHIKA G	19
29	214G1A0592	SAI SARANYA P	23
30	214G1A0593	SAMHITHA S	11
31	214G1A0594	SAMYU J N	20
32	214G1A0595	SASI VARUN KUMAR REDDY B	19
33	214G1A0596	SHAGUPTHA NAAZ D	23
34	214G1A0597	SHARAN KUMAR C	12
35	214G1A0598	SHARON MELORA ANGEL Z	22
36	214G1A0599	SHASHIKALA B	20
37	214G1A05A0	SHEeba SHAIK G	23
38	214G1A05A1	SIREESHA P	20
39	214G1A05A2	SIVA MANIKANTA B	17



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CIE-1
40	214G1A05A3	SNEHALATHA D	19
41	214G1A05A4	SOBITHA RANI G	27
42	214G1A05A5	SREEJA REDDY P	25
43	214G1A05A6	SUJITH A	13
44	214G1A05A7	SUMMIYA K	20
45	214G1A05A8	SUNIL KUMAR K	17
46	214G1A05A9	SURENDRA GOUD E	17
47	214G1A05B0	SURYA TEJA D	15
48	214G1A05B1	TARUN K	8
49	214G1A05B2	THRISHA A	23
50	214G1A05B3	THRISHA P	19
51	214G1A05B4	UDAYASREE S	19
52	214G1A05B5	VANITHA G	21
53	214G1A05B6	VARSHITHA B	22
54	214G1A05B7	VARSHITHA REDDY B	13
55	214G1A05B8	VARUN KUMAR REDDY B	11
56	214G1A05B9	VISWATEJA D	5
57	214G1A05C0	VYSHNAVI G	20
58	214G1A05C1	VYSHNAVI M	24
59	214G1A05C2	YASASWINI P	23
60	214G1A05C3	YASHEELA G	16
61	214G1A05C4	BINDU SAI S	21
62	214G1A05C5	PAVAN KUMAR REDDY K	8
63	214G1A05C6	SHILPA M	9
64	214G1A05C7	SREYA Y	22
65	214G1A05C8	UDAY KUMAR L	16
66	214G1A05C9	SUPREETH KUMAR REDDY U	5
67	224G5A0510	SAI SHANMUKHI N	24
68	224G5A0511	SHABHAREESH A	3
69	224G5A0512	SHAFIULLA K	20
70	224G5A0513	SHRAVAN KUMAR REDDY A	22
71	224G5A0514	TARUN KUMAR REDDY P	17
72	224G5A0515	VENKATA RANJITH KUMAR REDDY P	9



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Department of Computer Science and Engineering

Identification of slow learners & fast learners students and schedule for conduct of Remedial Classes

Weak students Identified

List of Students of II B.Tech, II-Sem, CSE-A & B

S.No.	Hall Ticket No.	Name of the student	Mid-1
1	214G1A0502	ABHISHEK B S	13
2	214G1A0503	AL FARHEEN P	14
3	214G1A0506	ARJUNESWARA RAO K	15
4	214G1A0507	ASWARTHA REDDY S	13
5	214G1A0509	AYUB S	11
6	214G1A0524	DURGA BHAVANI V	12
7	214G1A0526	EZAAZ BASHA U	14
8	214G1A0534	HARSHA VARDHAN P	8
9	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	13
10	214G1A0540	JASWANTH REDDY M	8
11	214G1A0545	KOUSHIK G	10
12	214G1A0547	LAKSHMI NARASIMHA REDDY G	3
13	214G1A0551	LINGARAJU M	7
14	214G1A0552	LOKESH B	14
15	214G1A0554	MAHESH BABU M	5
16	214G1A0556	MANIDEEP SAI Y	13
17	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	15
18	214G1A0563	MYTHREYA REDDY C	10
19	214G1A0564	NADIRA ANJUM J	10
20	214G1A0576	PALLAVI M (MEENUGA)	10
21	214G1A0583	RAVITEJA M	11
22	214G1A0590	SAI PRASANNA C	12
23	214G1A0593	SAMHITHA S	11
24	214G1A0597	SHARAN KUMAR C	12
25	214G1A05A6	SUJITH A	13
26	214G1A05B0	SURYA TEJA D	15
27	214G1A05B1	TARUN K	8
28	214G1A05B7	VARSHITHA REDDY B	13
29	214G1A05B8	VARUN KUMAR REDDY B	11
30	214G1A05B9	VISWATEJA D	5
31	214G1A05C5	PAVAN KUMAR REDDY K	8
32	214G1A05C6	SHILPA M	9
33	214G1A05C9	SUPREETH KUMAR REDDY U	5



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Department of Computer Science and Engineering

S.No.	Hall Ticket No.	Name of the student	Mid-1
34	224G5A0502	CHANDRASEKHAR R	15
35	224G5A0503	D PURUSHOTHAM	14
36	224G5A0507	JEEVAN KUMAR D	15
37	224G5A0511	SHABHAREESH A	3
38	224G5A0515	VENKATA RANJITH KUMAR REDDY P	9



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Time Table for Special Classes (for Weak Students):

S. No	Date	Time	Topics Discussed
UNIT-1			
1	15-05-2023	1:20 - 2:00 PM	Statements and Notations
			Connectives
			Well Formed Formulas
			Truth Tables
			Given Work on Truth Tables Construction
UNIT-2			
2	22-05-2023	1:20 - 2:00 PM	Operations on Binary Sets and Relations
			Hasse Diagrams
			Composition of Functions
			Permutation Functions
			Lattice and its Properties.
UNIT-3			
3	29-05-2023	1:20 - 2:00 PM	Algebraic Systems, Examples, General Properties
			Semi Groups and Monoids
			Homomorphism, Isomorphism.
			The Fundamental Theorem of Arithmetic
			Modular Arithmetic
UNIT-4			
4	5-06-2023	1:20 - 2:00 PM	Basic of Counting
			Permutations
			Combinations
			The Principles of Inclusion–Exclusion
			Pigeonhole Principle
UNIT-5			
5	12-06-2023	1:20 - 2:00 PM	Isomorphic Graphs
			Eulerian and Hamiltonian Graphs
			Euler's Formula
			Chromatic Number
			Algorithms for Spanning Trees.



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Attendance for Remedial Classes:

S. No.	Hall Ticket No.	Name of the student	No. of special classes conducted	No. of special classes Attended
1	214G1A0502	ABHISHEK B S	5	3
2	214G1A0503	AL FARHEEN P	5	3
3	214G1A0506	ARJUNESWARA RAO K	5	3
4	214G1A0507	ASWARTHAA REDDY S	5	3
5	214G1A0509	AYUB S	5	3
6	214G1A0524	DURGA BHAVANI V	5	3
7	214G1A0526	EZAAZ BASHA U	5	3
8	214G1A0534	HARSHA VARDHAN P	5	3
9	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	5	4
10	214G1A0540	JASWANTH REDDY M	5	4
11	214G1A0545	KOUSHIK G	5	1
12	214G1A0547	LAKSHMI NARASIMHA REDDY G	5	4
13	214G1A0551	LINGARAJU M	5	3
14	214G1A0552	LOKESH B	5	4
15	214G1A0554	MAHESH BABU M	5	4
16	214G1A0556	MANIDEEP SAI Y	5	3
17	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	5	4
18	214G1A0563	MYTHREYA REDDY C	5	3
19	214G1A0564	NADIRA ANJUM J	5	4
20	214G1A0576	PALLAVI M (MEENUGA)	5	4
21	214G1A0583	RAVITEJA M	5	4
22	214G1A0590	SAI PRASANNA C	5	3
23	214G1A0593	SAMHITHA S	5	3
24	214G1A0597	SHARAN KUMAR C	5	4
25	214G1A05A6	SUJITH A	5	3
26	214G1A05B0	SURYA TEJA D	5	4
27	214G1A05B1	TARUN K	5	3
28	214G1A05B7	VARSHITHA REDDY B	5	4
29	214G1A05B8	VARUN KUMAR REDDY B	5	4
30	214G1A05B9	VISWATEJA D	5	4
31	214G1A05C5	PAVAN KUMAR REDDY K	5	4
32	214G1A05C6	SHILPA M	5	3
33	214G1A05C9	SUPREETH KUMAR REDDY U	5	2
34	224G5A0502	CHANDRASEKHAR R	5	2
35	224G5A0503	D PURUSHOTHAM	5	4
36	224G5A0507	JEEVAN KUMAR D	5	4



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

S. No.	Hall Ticket No.	Name of the student	No. of special classes conducted	No. of special classes Attended
37	224G5A0511	SHABHAREESH A	5	4
38	224G5A0515	VENKATA RANJITH KUMAR REDDY P	5	5



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Department of Computer Science and Engineering

14. II B.Tech II SEM – CSE A & B Continuous Alternative Assessment – 1

Answer the following questions

Total Marks-10

Q. No.	Questions	Marks	CO	Cognitive Level
Unit-III				
1	Write the Euclidean algorithm with an example	2	CO4	Apply
Unit-IV				
2	Explain the permutations and combinations with an example.	2	CO5	Apply
3	Explain pigeonhole principle and its applications.	2	CO5	Apply
Unit-V				
4	Write the algorithms for spanning trees with an example.	2	CO6	Apply
5	Define K- regular graph. Give examples of 2- regular, 3- regular, 4- regular graphs.	2	CO6	Apply

- Last date for submitting Assignment-2: **05-06-2023**
- Also, Put the Submitted Copy in Google Class Room once Evaluation is completed.



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Department of Computer Science and Engineering

14.1 CONTINUOUS ALTERNATIVE ASSESSMENT-I MARKS:

II B.Tech II SEM CSE A:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-2
1	214G1A0501	ABDUL KHADIRI K	10
2	214G1A0502	ABHISHEK B S	7
3	214G1A0503	AL FARHEEN P	7
4	214G1A0504	AMBICA C	7
5	214G1A0505	ANIL KUMAR B	8
6	214G1A0506	ARJUNESWARA RAO K	6
7	214G1A0507	ASWARTHA REDDY S	10
8	214G1A0508	AYESHA K	7
9	214G1A0509	AYUB S	7
10	214G1A0510	BANU BEE S	8
11	214G1A0511	BHANUCHAND C	9
12	214G1A0512	BHARATHI B	8
13	214G1A0513	BHAVANA Y	8
14	214G1A0514	BHUMIKA B	7
15	214G1A0515	BINDU D	8
16	214G1A0516	CHAITRA Y	10
17	214G1A0517	CHANDRA LEKHA C	8
18	214G1A0518	DEEPIKA T	7
19	214G1A0519	DHANA LAKSHMI A	7
20	214G1A0520	DINESH NAIK S	10
21	214G1A0521	DIVYA SAI R	8
22	214G1A0522	DIVYA SREE B	6
23	214G1A0523	DIVYA SREE K	8
24	214G1A0524	DURGA BHAVANI V	8
25	214G1A0525	DURGA P	8
26	214G1A0526	EZAAZ BASHA U	7
27	214G1A0527	GANESH D	6
28	214G1A0528	GANESH G	9
29	214G1A0529	GAYATHRI M	10
30	214G1A0530	GEETHA SERI L	10
31	214G1A0531	GOWTHAMI M	10
32	214G1A0532	HEMA LATHA D	7
33	214G1A0533	HARSHA VARDHAN M	8
34	214G1A0534	HARSHA VARDHAN P	6
35	214G1A0535	HARSHIKA K	6
36	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	6
37	214G1A0537	HEMANTH KUMAR RAO M	9
38	214G1A0538	JAHNAVI D	7
39	214G1A0539	JAHNAVI E	7
40	214G1A0540	JASWANTH REDDY M	6
41	214G1A0541	KAVITHA S	8
42	214G1A0542	KEERTHANA V	8
43	214G1A0543	KEERTHI REDDY K	7
44	214G1A0544	KIRANMAYEE SAI T	9
45	214G1A0545	KOUSHIK G	7
46	214G1A0546	KUSUMA K	7



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-2
47	214G1A0547	LAKSHMI NARASIMHA REDDY G	8
48	214G1A0548	BHANU PRAKASH B	7
49	214G1A0549	LAVANYA P	6
50	214G1A0550	LIKHITHA D	7
51	214G1A0551	LINGARAJU M	7
52	214G1A0552	LOKESH B	8
53	214G1A0553	LOUKYANJALI E	8
54	214G1A0554	MAHESH BABU M	6
55	214G1A0555	MANASA B	10
56	214G1A0556	MANIDEEP SAI Y	8
57	214G1A0557	MEENAKSHI B	6
58	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	7
59	214G1A0559	MOHAMMAD MANSOOR K	7
60	214G1A0560	MOHAMMED FAYAZ B	8
61	214G1A0561	MOUNIKA A C	7
62	214G1A0562	MOUNIKA V	9
63	214G1A0563	MYTHREYA REDDY C	8
64	224G5A0501	ANILA R	6
65	224G5A0502	CHANDRASEKHAR R	10
66	224G5A0503	D PURUSHOTHAM	7
67	224G5A0504	DEEPIKA SREE S	8
68	224G5A0505	GOVARDHINI GOWD G	8
69	224G5A0506	HEMALATHA M	8
70	224G5A0507	JEEVAN KUMAR D	8
71	224G5A0508	KUSUMA K	9
72	224G5A0509	NANDITHA J	9

II B.Tech II Sem CSE B:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-2
1	214G1A0564	NADIRA ANJUM J	0
2	214G1A0565	NAGA SHRAVAN B	8
3	214G1A0566	NAGATEJA DEEP REDDY B	8
4	214G1A0567	NANDHINI M	7
5	214G1A0568	NANDINI B	6
6	214G1A0569	NARENDRA M	8
7	214G1A0570	NAVADEEP REDDY V	8
8	214G1A0571	NAVYASREE S	8
9	214G1A0572	NEERAJ P	8
10	214G1A0573	NEHA A	8
11	214G1A0574	PALLAVI B	8
12	214G1A0575	PALLAVI M (MANNELA)	9
13	214G1A0576	PALLAVI M (MEENUGA)	0
14	214G1A0577	PAVITRA K	6
15	214G1A0578	PRABHAS REDDY R	8
16	214G1A0579	PRASHANTH KUMAR REDDY P	8
17	214G1A0580	PUJAN KUMAR M	8



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-2
18	214G1A0581	RAMYASREE G	4
19	214G1A0582	RANGA SAHITHI C	8
20	214G1A0583	RAVITEJA M	6
21	214G1A0584	REVATHI B	8
22	214G1A0585	SAI DHANUSH D	8
23	214G1A0586	SAI HARITHA G	9
24	214G1A0587	SAI JAHNAVI G	9
25	214G1A0588	SAI MEGHANA REDDY G	8
26	214G1A0589	SAI PAVANI M	8
27	214G1A0590	SAI PRASANNA C	9
28	214G1A0591	SAI PREETHIKA G	9
29	214G1A0592	SAI SARANYA P	9
30	214G1A0593	SAMHITHA S	0
31	214G1A0594	SAMYU J N	8
32	214G1A0595	SASI VARUN KUMAR REDDY B	8
33	214G1A0596	SHAGUPtha NAAZ D	7
34	214G1A0597	SHARAN KUMAR C	8
35	214G1A0598	SHARON MELORA ANGEL Z	6
36	214G1A0599	SHASHIKALA B	8
37	214G1A05A0	SHEeba SHAIK G	7
38	214G1A05A1	SIREESHA P	8
39	214G1A05A2	SIVA MANIKANTA B	8
40	214G1A05A3	SNEHALATHA D	9
41	214G1A05A4	SOBITHA RANI G	9
42	214G1A05A5	SREEJA REDDY P	8
43	214G1A05A6	SUJITH A	8
44	214G1A05A7	SUMMIYA K	8
45	214G1A05A8	SUNIL KUMAR K	8
46	214G1A05A9	SURENDRA GOUD E	7
47	214G1A05B0	SURYA TEJA D	7
48	214G1A05B1	TARUN K	5
49	214G1A05B2	THRISHA A	8
50	214G1A05B3	THRISHA P	7
51	214G1A05B4	UDAYASREE S	8
52	214G1A05B5	VANITHA G	8
53	214G1A05B6	VARSHITHA B	8
54	214G1A05B7	VARSHITHA REDDY B	8
55	214G1A05B8	VARUN KUMAR REDDY B	0
56	214G1A05B9	VISWATEJA D	0
57	214G1A05C0	VYSHNAVIG	8
58	214G1A05C1	VYSHNAVI M	8
59	214G1A05C2	YASASWINI P	8
60	214G1A05C3	YASHEELA G	8
61	214G1A05C4	BINDU SAIS	9
62	214G1A05C5	PAVAN KUMAR REDDY K	8
63	214G1A05C6	SHILPA M	8
64	214G1A05C7	SREYA Y	9
65	214G1A05C8	UDAY KUMAR L	7
66	214G1A05C9	SUPREETH KUMAR REDDY U	7
67	224G5A0510	SAI SHANMUKHI N	8



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S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-2
68	224G5A0511	SHABHAREESH A	8
69	224G5A0512	SHAFIULLA K	8
70	224G5A0513	SHRAVAN KUMAR REDDY A	8
71	224G5A0514	TARUN KUMAR REDDY P	8
72	224G5A0515	VENKATA RANJITH KUMAR REDDY P	7



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

15. CIE-2 Question Paper & Scheme of Evaluation:

Hall Ticket No.:

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SRIT R20

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech II Sem – Continuous Internal Examinations II – Jun 2023 (AY: 2022-2023)

DISCRETE MATHEMATICS

[R204GA05401]

(Common to CSE, CSD & CSM)

SET – 2

Max. Marks: 30

Time: 2 hours

Answer the following questions

Q. No	Questions	Unit	Marks	CO	Cognitive Level
1	a) Mention the properties of integers.	III	2	CO1	Remember
	b) Define Sum and Product rule.	IV	2	CO1	Remember
	c) How a given graph is said to be planar?	V	2	CO1	Remember
UNIT-III					
2	Write the Euclidian algorithm with an example.		8	CO4	Apply
OR					
3	Explain the Fermat's theorem and Euler's theorem with an example.		8	CO4	Apply
UNIT-IV					
4	Explain pigeonhole principle and its applications.		8	CO5	Understand
OR					
5	Explain the principles of inclusion – exclusion.		8	CO5	Understand
UNIT-V					
6	Explain the matrix representation of graphs with example.		8	CO6	Apply
OR					
7	Explain krushkal's algorithm with an example.		8	CO6	Apply

Prepared by

Name of the Faculty:

Mr. G. Chinna Pullaiah, Mr. M. Narasimhulu, Mr. P. Ramayapa Reddy

Signature of the Faculty:



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Department of Computer Science and Engineering



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

I/II/III/IV B. Tech I / II Sem CIE - I / II Examinations - AY: 2022 - 23

Subject Name: Discrete Mathematics Subject Code: R204LA05401
Name & Signature of the Examiner: H. Nallikinulu, M.

Scheme of Evaluations

- 1 (a) Interpreting properties with formulae or examples - 2M
b) sum rule - definition & product rule - definition - 2M
b) specifying no cross over edges (IM) + planar graph Dia (IM) - 2M

UNIT-II

- 2) Euclidean Theorem - 1M
Euclidean Algorithm - 3M
Euclidean Example - 2M
Euclidean Example using Algorithm $\frac{2M}{8M}$
of
- 3) Fermat's theorem definition - 2M
little fermat theorem - 2M
Euler's theorem definition - 2M
Examples of Fermat theorem & little fermat theorem, Euler theorem - 2M
 $\frac{2M}{8M}$

UNIT-IV

- 4) Pigeon hole principle definition - 1M
pigeon hole principle generic theorem - 2M
pigeon hole principle subset of objects theorem - 2M
Examples of pigeon hole principle using generic theorem 7M
Examples of subset of objects theorem - 1M
Applications of pigeon hole principle $\frac{2M}{8M}$



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- ⑤ → Principle of Inclusion - of Exclusion → Theorem & proof of $n(A \cup B)$ - 2 M
→ Examples for $n(A \cup B)$ - 1 M
- Theorem & proof of $n(A \cup B \cup C)$ - 3 M
- Examples of $n(A \cup B \cup C)$ - 1 M
- Formula for $n(A_1 \cup A_2 \cup \dots \cup A_n)$ - $\frac{1M}{8M}$

OR

UNIT-V

- ⑥ - Need of matrix Representation of a Graph - 1 M
- classification of matrix Representation - 1 M
- Adjacency Matrix Representations Rules - 2 M
- Adjacency matrix example - 1 M
- Incidence matrix Representation rules - 2 M
- incidence matrix Representation examples - $\frac{1M}{8M}$

of

- ⑦ - purpose of using Kruskal's Algorithm - 1 M
- Initial condition of the graph to evaluate Kruskal's algorithm - 1 M
- Specifying Kruskal Algorithm using Step by step procedure - 3 M
- Take a graph that satisfy conditions to evaluate Kruskal's Algorithm - 1 M
- step by step implementation of Kruskal's Algorithm using the specified example - $\frac{2M}{8M}$



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

16. Student Feedback analysis and Action taken-II:

II B.Tech II Sem CSE - A:



SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY(AUTONOMOUS) (Code: 4G)
(Autonomous)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu Dist-515701

Department of Computer Science & Engineering

FEEDBACK-II

Date : 15/06/2023

Course Title	Discrete Mathematics	Course Code	R204GA05401
Class & Sem	B Tech, Computer Science & Engineering, 2/4 Semester-II-A	Regulation	R20
Instructor	Mr. M. Narasimulu	Date	13/06/2023

S.No	Parameters considered in the feedback analysis	Excellent	Very Good	Good	Fair	Poor	%
1	Systematic presentation of topics in class	18	23	28	3	0	5.94
2	Coverage of Syllabus as per the schedule	17	25	28	1	0	7.04
3	Effective usage of ICT tools in delivering the content	18	23	29	2	0	5.98
4	Understanding the subject	15	24	30	3	0	6.77
5	Effectiveness of using Google Class Room	15	21	35	1	0	5.74
6	Interaction and encouraging the students to ask questions and discusses related questions pertaining to the subject	19	21	30	2	0	6.98
7	Quality of Lecture notes/Learning materials/Recorded videos placed in the Google Class Room	19	23	29	1	0	7.08
8	Confidence level in facing the Continuous Internal Examinations/Semester End exams	16	23	31	2	0	6.84
9	Degree of acquiring the abilities expressed in course outcomes.	17	26	29	0	0	7.08
TOTAL		154	209	269	15	0	
POINTS		308	313.5	269	7.5	0	
Grand Total		898					6.94

Specific Comments by the Students: *Not getting the information clearly on the topics.
Need more examples.*

Suggestions by HOD/ Principal: *give the examples whenever needed.*

Neethu Reddy
CSE-HOD
Computer Science Engineering
Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701, A.P.

G. Bhavani
PRINCIPAL
Principal
Srinivasa Ramanujan Inst
of Technology (Autonom
Ananthapuramu - 515 70



Srinivasa Ramanujan Institute of Technology (AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

II B.Tech II Sem CSE – B:



SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY(AUTONOMOUS) (Code: 4G)
(Autonomous)
Rotarypuram Village, B K Samudram Mandal, Ananthapuramu Dist-515701

Department of Computer Science & Engineering

FEEDBACK-II

Date:-15/06/2023

Course Title : Discrete Mathematics	Course Code : R204GA05401
Class & Sem : B.Tech, Computer Science & Engineering,	Regulation : R20
2/4 Semester-II-B	
Instructor : Mr. M. Narasimhulu	Date : 13/06/2023
	Academic Year : 2022-2023

S.No	Parameters considered in the feedback analysis	Excellent	Very Good	Good	Fair	Poor	%
1	Systematic presentation of topics in class	11	14	31	5	0	6.27
2	Coverage of Syllabus as per the schedule	10	15	30	5	0	6.25
3	Effective usage of ICT tools in delivering the content	10	14	32	4	0	6.25
4	Understanding the subject	10	15	32	3	0	6.33
5	Effectiveness of using Google Class Room	10	19	28	4	0	6.43
6	Interaction and encouraging the students to ask questions and discusses related questions pertaining to the subject	10	19	28	4	0	6.43
7	Quality of Lecture notes/Learning materials/Recorded videos placed in the Google Class Room	10	16	32	3	0	6.35
8	Confidence level in facing the Continuous Internal Examinations/Semester End exams	9	16	32	4	0	6.23
9	Degree of acquiring the abilities expressed in course outcomes.	9	22	27	3	0	6.52
TOTAL		89	150	272	35	0	
POINTS		178	225	272	17.5	0	
Grand Total		692.5					6.34

Specific Comments by the Students: *- not good understanding
- new subject, faculty support is needed very much to understand*

Suggestions by HOD/ Principal: *Try to give more explanation*

CSE HOD
Chairman of Computer Science Engineering
Srinivasa Ramanujan Institute of
Technology (Autonomous)
Ananthapuramu - 515 701 4 A

PRINCIPAL
Principal
Srinivasa Ramanujan In
of Technology (Autono
Ananthapuramu - 515 7



Srinivasa Ramanujan Institute of Technology (AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

17. Details of Innovative Teaching / Pedagogical methods implemented:

II B.Tech II Sem CSE – A:



Srinivasa Ramanujan Institute of Technology (AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Report on Teach Back Session

1. Course Name	: Discrete Mathematics
2. Course Coordinator	: M Narasimhulu
3. Pedagogy Technique Used	: Flipped Classes
4. Class & Semester	: II B.Tech & II Semester (A-Section)
5. Date(s)	: 07/12/2022
6. No. of Participants	: 63
7. Brief Report on the event:	

The flipped classroom sometimes referred to as the inverted classroom, is a modern instructional strategy that offers student-centered peer-assisted learning.

Step 1: Introduced the Concept Learning

Step 2: Learning material: Online reading

Step 3: Evaluating what students have learned with Team based Problem Solving

Goals/ objective of methods:

- Create a collaborative learning environment in the classroom.
- Facilitate communication between Students.

Find the transitive closures of these relations on {1, 2, 3, 4}.

- a) $\{(1, 2), (2, 1), (2, 3), (3, 4), (4, 1)\}$
- b) $\{(2, 1), (2, 3), (3, 1), (3, 4), (4, 1), (4, 3)\}$
- c) $\{(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)\}$
- d) $\{(1, 1), (1, 4), (2, 1), (2, 3), (3, 1), (3, 2), (3, 4), (4, 2)\}$



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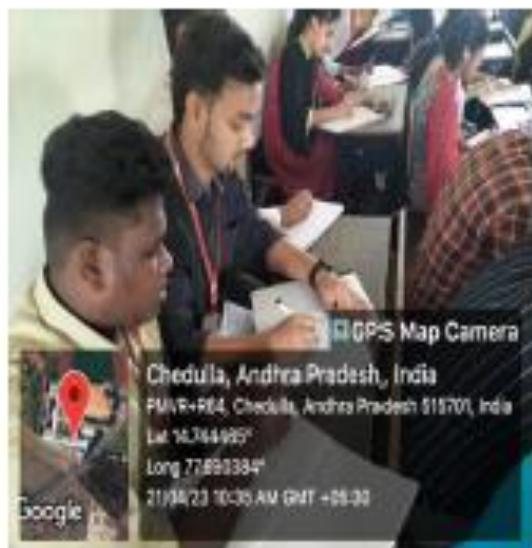
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Department of Computer Science and Engineering

Event Photos:

Students are divided into Teams. And they are discussing and solving the given problem





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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

Students Participated:

S.No	Roll No	Student Name
1	214G1A0502	BAYAKATTI SOM ABHISHEK
2	214G1A0503	PATHAN AL FARHEEN
3	214G1A0504	CHELURU AMBICA
4	214G1A0505	BANDI ANIL KUMAR
5	214G1A0506	K ARJUNESWARA RAO
6	214G1A0507	SETTIPI ASWARTHIA REDDY
7	214G1A0508	KONDAKAVALI AYESHA
8	214G1A0509	SHAIK AYUB
9	214G1A0510	SATYALA BANU BEE
10	214G1A0511	CHINTA BHANUCHAND
11	214G1A0512	BHIMIREDDY BHARATHI
12	214G1A0513	YARRAGUNTA BHAVANA
13	214G1A0514	BHUMI REDDY BHUMIKA
14	214G1A0515	DEVARAKONDA BINDU
15	214G1A0516	YALLARI CHAITRA
16	214G1A0517	CHOUTAPALLI CHANDRA LEKHA
17	214G1A0518	THIPPIREDDY GARI DEEPIKA
18	214G1A0519	ANKE DHANA LAKSHMI
19	214G1A0520	SUGALI DINESH NAIK
20	214G1A0521	ROOPANAGUDI DIVYA SAI
21	214G1A0522	BOLLU DIVYA SREE
22	214G1A0523	KUMMARA DIVYA SREE
23	214G1A0524	VANKA DURGABHAVANI
24	214G1A0525	PALELLU DURGA
25	214G1A0527	DASARI GANESH
26	214G1A0528	G GANESH
27	214G1A0529	MANGALA GAYATHRI
28	214G1A0530	LINGALA GEETHA SERI
29	214G1A0531	MANGALA GOWTHAMI
30	214G1A0532	DUBASI HEMA LATHA
31	214G1A0534	PUTAKA HARSHA VARDHAN
32	214G1A0535	KASEPALLI HARSHIKA
33	214G1A0536	SUNDURU HEMACHANDRA KIRAN SREENIVAS
34	214G1A0537	MAHENDRAKAR HEMANTH KUMAR RAO
35	214G1A0538	DASARAJU JAHNAVI



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

S.No	Roll No	Student Name
36	214G1A0540	MODIEM JASWANTH REDDY
37	214G1A0541	SUNKARA KAVITHA
38	214G1A0542	VELPULA KEERTHANA
39	214G1A0543	KANCHAM KEERTHI REDDY
40	214G1A0544	THAMMINENI KIRANMAYEE SAI
41	214G1A0545	GADAMSHETTY KOUSHIK
42	214G1A0546	KUMMULURU KUSUMA
43	214G1A0547	GANGANA LAKSHMI NARASIMHA REDDY
44	214G1A0548	BOYA BHANU PRAKASH
45	214G1A0549	PAMISETTY LAVANYA
46	214G1A0550	DODDI LIKHITHA
47	214G1A0552	BUDDA LOKESH
48	214G1A0553	EDIGA LOUKYANJALI
49	214G1A0554	MALLUPEDDI MAHESH BABU
50	214G1A0555	BUKKACHERLA MANASA
51	214G1A0556	YERUKULA MANIDEEP SAI
52	214G1A0557	BOYA MEENAKSHI
53	214G1A0559	KHURESHI MOHAMMAD MANSOOR
54	214G1A0561	ANUMPALLI CHALLA MOUNIKA
55	214G1A0562	VAJRAKARUR MOUNIKA
56	224G5A0501	RAYAVELURU ANILA
57	224G5A0503	DANDU PURUSHOTHAM
58	224G5A0504	SAYA DEEPIKA SREE
59	224G5A0505	GUMMADI GOVARDHINI GOWD
60	224G5A0506	MADAM HEMALATHA
61	224G5A0507	DUBBALA JEEVAN KUMAR
62	224G5A0508	KUNCHEPU KUSUMA
63	224G5A0509	JABADE NANDITHA



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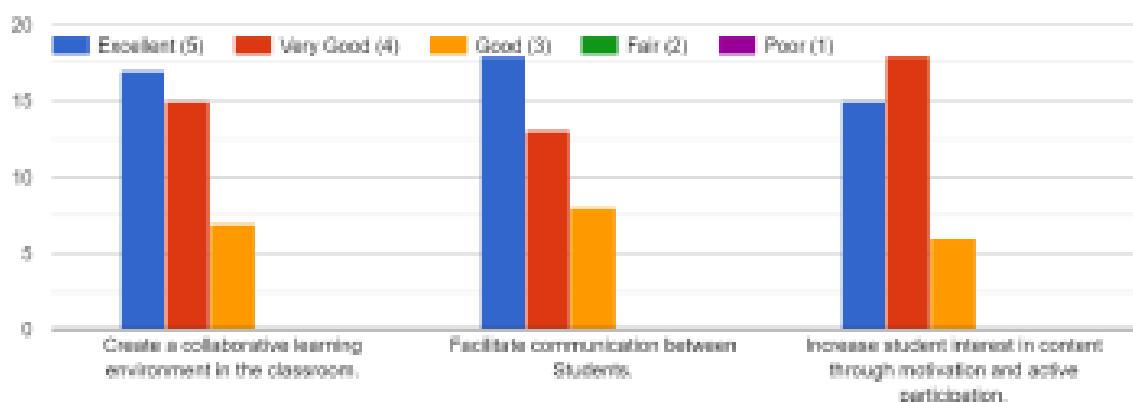
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Department of Computer Science and Engineering

Feed back of the pedagogy Activity:

Particulars



Signature of the faculty

Signature of the HOD



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

II B.Tech II Sem CSE – B:



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Report on Teach Back Session

- | | |
|-------------------------------|---------------------------------------|
| 1. Course Name | : Discrete Mathematics |
| 2. Course Coordinator | : M Narasimhulu |
| 3. Pedagogy Technique Used | : Flipped Classes |
| 4. Class & Semester | : II B.Tech & II Semester (B-Section) |
| 5. Date(s) | : 07/12/2022 |
| 6. No. of Participants | : 64 |
| 7. Brief Report on the event: | |

The flipped classroom sometimes referred to as the inverted classroom, is a modern instructional strategy that offers student-centered peer-assisted learning.

Step 1: Introduced the Concept Learning

Step 2: Learning material: Online reading

Step 3: Evaluating what students have learned with Team based Problem Solving

Goals/ objective of methods:

- Create a collaborative learning environment in the classroom.
- Facilitate communication between Students.
- Increase student interest in content through motivation and active

Find the transitive closures of these relations on {1, 2, 3, 4}.

- a) $\{(a, c), (b, d), (c, a), (d, b), (e, d)\}$
- b) $\{(b, c), (b, e), (c, e), (d, a), (e, b), (e, c)\}$
- c) $\{(a, b), (a, c), (a, e), (b, a), (b, c), (c, a), (c, b), (d, a), (e, d)\}$
- d) $\{(a, e), (b, a), (b, d), (c, d), (d, a), (d, c), (e, a), (e, b), (e, c), (e, e)\}$



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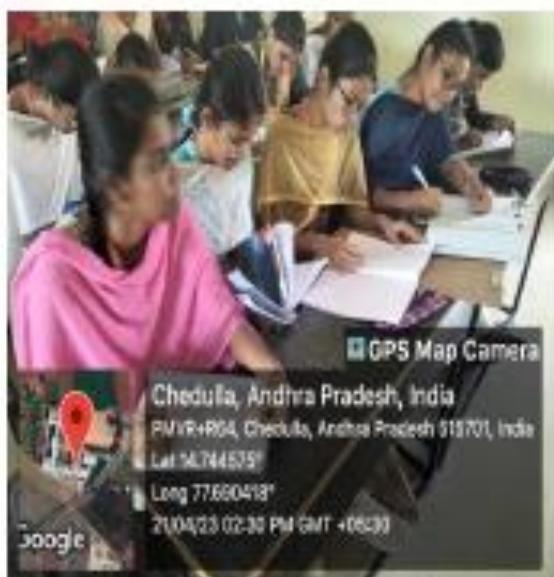
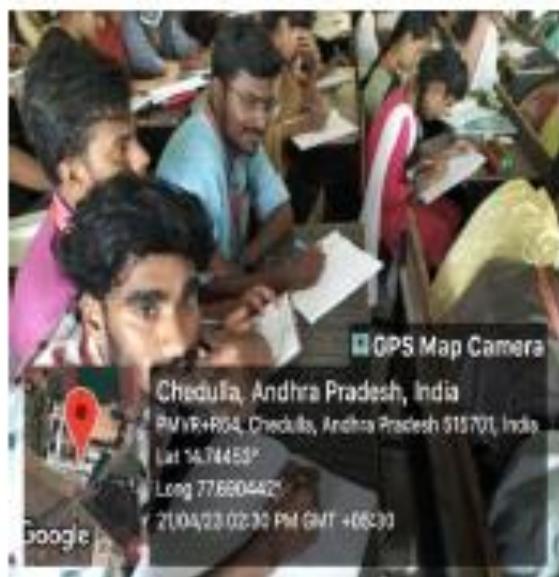
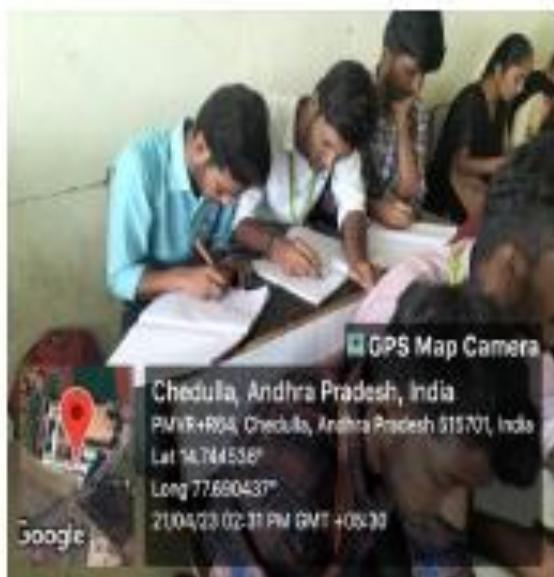
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Event Photos:

Students are divided into Teams. And they are discussing and solving the given problem





Srinivasa Ramanujan Institute of Technology

(AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

List of Students Participated:

S.No	Roll No	Student Name
1	214G1A0564	JANGUBHAI NADIRA ANJUM
2	214G1A0565	BULLE NAGA SHRAVAN
3	214G1A0566	BORRA NAGATEJA DEEP REDDY
4	214G1A0567	MARKAPURAM NANDHINI
5	214G1A0568	BANAGANI NANDINI
6	214G1A0569	MALAPULA NARENDRA
7	214G1A0570	VENNAPUSA NAVADEEP REDDY
8	214G1A0572	PAPPURU NEERAJ
9	214G1A0573	ANTHAPU NEHA
10	214G1A0574	BANDARU PALLAVI
11	214G1A0575	MANNELA PALLAVI
12	214G1A0576	MEENAGA PALLAVI
13	214G1A0578	RAGIAKULA PRABHAS REDDY
14	214G1A0579	PULLAIAHGARI PRASHANTH KUMAR REDDY
15	214G1A0580	MADANA PUJAN KUMAR
16	214G1A0582	CHENNA RANGA SAHITHI
17	214G1A0583	M RAVITEJA
18	214G1A0584	BANDARI REVATHI
19	214G1A0585	DARISHA SAI DHANUSH
20	214G1A0586	GOURAVAM SAI HARITHA
21	214G1A0587	GOLLAPALLI SAI JAHNAVI
22	214G1A0588	GAJJALA SAI MEGHANA REDDY
23	214G1A0590	CHENNAREDDYGARI SAI PRASANNA
24	214G1A0591	GARADALA SAI PREETHIKA
25	214G1A0592	PINNU SAI SARANYA
26	214G1A0593	SUNKU SAMHITHA
27	214G1A0594	JAWALKAR NANDA KUMAR SAMYU
28	214G1A0595	BANDI SASI VARUN KUMAR REDDY
29	214G1A0596	DUDEKULA SHAGUPTHA NAAZ
30	214G1A0597	CHINTHALA SHARAN KUMAR
31	214G1A0598	ZAKKAM SHARON MELORA ANGEL
32	214G1A0599	BONTHALA SHASHIKALA
33	214G1A05A1	PALLI SIREESHA
34	214G1A05A2	BALA SIVA MANIKANTA
35	214G1A05A3	DEVARAKONDA SNEHALATHA



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Department of Computer Science and Engineering

S.No	Roll No	Student Name
36	214G1A05A4	GUNDA SOBITHA RANI
37	214G1A05A5	PULLALAREVU SREEJA REDDY
38	214G1A05A6	AVULA SUJITH
39	214G1A05A8	KODAMALA SUNIL KUMAR
40	214G1A05A9	EDIGA SURENDRA GOUD
41	214G1A05B0	DANDUBOINA SURYA TEJA
42	214G1A05B1	KARRA TARUN
43	214G1A05B2	ANDRA THRISHA
44	214G1A05B3	PEGOLLA THRISHA
45	214G1A05B4	SURAM UDAYA SREE
46	214G1A05B5	GOLLA VANITHA
47	214G1A05B6	BOREDDY VARSHITHA
48	214G1A05B7	BOMMANA VARSHITHA REDDY
49	214G1A05B8	BATHINI VARUN KUMAR REDDY
50	214G1A05B9	DEVARAKONDA VISWATEJA
51	214G1A05C1	MANCHIKANTI VYSHNAVI
52	214G1A05C2	PAGADAM SETTY YASASWINI
53	214G1A05C3	GONEGONDLA YASHEELA
54	214G1A05C4	SUNDURU BINDU SAI
55	214G1A05C5	KOPPERLA PAVAN KUMAR REDDY
56	214G1A05C6	MANNALA SHILPA
57	214G1A05C7	YERRAGUNTA SREYA
58	214G1A05C8	LINGAM UDAY KUMAR
59	214G1A05C9	UMNABAD SUPREETH KUMAR REDDY
60	224G5A0510	NICHANAMETLA SAI SHANMUKHI
61	224G5A0511	ASADI SHABHAREESH
62	224G5A0513	AVULA SHRAVAN KUMAR REDDY
63	224G5A0514	PERAM TARUN KUMAR REDDY
64	224G5A0515	PANTHAM VENKATA RANJITH KUMAR REDDY



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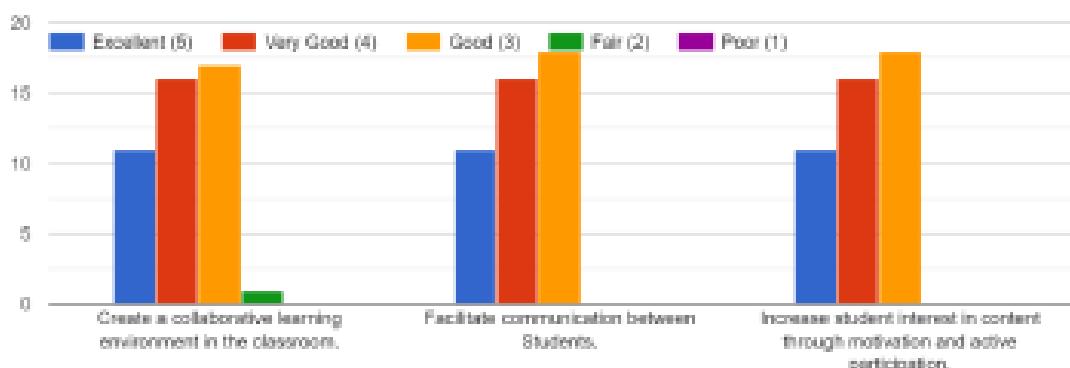
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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

Feedback of Pedagogy Activity:

Particulars



Signature of the faculty

Signature of the HOD



Srinivasa Ramanujan Institute of Technology

(AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

18. Consolidated Internal Marks:

II B.Tech II Sem CSE-A:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1	CAA-2	CIE-1	CIE-2	TIM (40M)
1	214G1A0501	ABDUL KHADIRI K	8	10	23	17	31
2	214G1A0502	ABHISHEK B S	8	7	13	16	23
3	214G1A0503	AL FARHEEN P	8	7	14	15	23
4	214G1A0504	AMBICA C	8	7	22	22	30
5	214G1A0505	ANIL KUMAR B	8	8	25	28	36
6	214G1A0506	ARJUNESWARA RAO K	6	6	15	15	21
7	214G1A0507	ASWARTHA REDDY S	9	10	13	23	31
8	214G1A0508	AYESHA K	8	7	26	27	35
9	214G1A0509	AYUB S	8	7	11	24	29
10	214G1A0510	BANU BEE S	8	8	21	23	31
11	214G1A0511	BHANUCHAND C	8	9	20	25	33
12	214G1A0512	BHARATHI B	8	8	25	27	36
13	214G1A0513	BHAVANA Y	8	8	24	27	35
14	214G1A0514	BHUMIKA B	8	7	21	23	31
15	214G1A0515	BINDU D	7	8	26	26	34
16	214G1A0516	CHAITRA Y	8	10	25	26	35
17	214G1A0517	CHANDRA LEKHA C	8	8	22	26	34
18	214G1A0518	DEEPIKA T	7	7	25	24	33
19	214G1A0519	DHANA LAKSHMI A	7	7	27	26	36
20	214G1A0520	DINESH NAIK S	8	10	16	17	26
21	214G1A0521	DIVYA SAI R	8	8	22	19	30
22	214G1A0522	DIVYA SREE B	8	6	18	25	32
23	214G1A0523	DIVYA SREE K	8	8	20	19	28
24	214G1A0524	DURGA BHAVANI V	7	8	12	13	21
25	214G1A0525	DURGA P	6	8	18	20	27
26	214G1A0526	EZAAZ BASHA U	7	7	14	22	28
27	214G1A0527	GANESH D	8	6	17	21	28
28	214G1A0528	GANESH G	8	9	18	21	29
29	214G1A0529	GAYATHRI M	8	10	16	16	25
30	214G1A0530	GEETHA SERI L	8	10	23	24	33
31	214G1A0531	GOWTHAMI M	8	10	22	25	34
32	214G1A0532	HEMA LATHA D	8	7	20	20	28
33	214G1A0533	HARSHA VARDHAN M	8	8	21	20	29
34	214G1A0534	HARSHA VARDHAN P	8	6	8	6	16
35	214G1A0535	HARSHIKA K	7	6	20	21	28
36	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	7	6	13	17	23
37	214G1A0537	HEMANTH KUMAR RAO M	8	9	17	24	32
38	214G1A0538	JAHNAVI D	8	7	26	24	34



Srinivasa Ramanujan Institute of Technology

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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1	CAA-2	CIE-1	CIE-2	TIM (40M)
39	214G1A0539	JAHNAVI E	8	7	17	16	25
40	214G1A0540	JASWANTH REDDY M	7	6	8	15	21
41	214G1A0541	KAVITHA S	8	8	16	21	28
42	214G1A0542	KEERTHANA V	8	8	19	19	27
43	214G1A0543	KEERTHI REDDY K	8	7	24	24	32
44	214G1A0544	KIRANMAYEE SAI T	8	9	22	25	33
45	214G1A0545	KOUSHIK G	8	7	10	14	21
46	214G1A0546	KUSUMA K	9	7	21	24	32
47	214G1A0547	LAKSHMI NARASIMHA REDDY G	8	8	3	15	21
48	214G1A0548	BHANU PRAKASH B	8	7	20	20	28
49	214G1A0549	LAVANYA P	8	6	21	26	33
50	214G1A0550	LIKHITHA D	8	7	22	24	32
51	214G1A0551	LINGARAJU M	5	7	7	15	20
52	214G1A0552	LOKESH B	6	8	14	21	27
53	214G1A0553	LOUKYANJALI E	8	8	20	24	32
54	214G1A0554	MAHESH BABU M	8	6	5	10	16
55	214G1A0555	MANASA B	8	10	25	25	34
56	214G1A0556	MANIDEEP SAI Y	8	8	13	0	19
57	214G1A0557	MEENAKSHI B	8	6	17	18	25
58	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	8	7	15	20	27
59	214G1A0559	MOHAMMAD MANSOOR K	8	7	19	16	27
60	214G1A0560	MOHAMMED FAYAZ B	7	8	16	1	21
61	214G1A0561	MOUNIKA A C	8	7	17	26	32
62	214G1A0562	MOUNIKA V	8	9	18	23	31
63	214G1A0563	MYTHREYA REDDY C	6	8	10	13	21
64	224G5A0501	ANILA R	8	6	16	9	22
65	224G5A0502	CHANDRASEKHAR R	7	10	15	18	26
66	224G5A0503	D PURUSHOTHAM	8	7	14	16	24
67	224G5A0504	DEEPIKA SREE S	8	8	21	20	29
68	224G5A0505	GOVARDHINI GOWD G	8	8	19	24	31
69	224G5A0506	HEMALATHA M	7	8	18	23	30
70	224G5A0507	JEEVAN KUMAR D	8	8	15	16	24
71	224G5A0508	KUSUMA K	8	9	21	21	30
72	224G5A0509	NANDITHA J	8	9	18	21	29



Srinivasa Ramanujan Institute of Technology

(AUTONOMOUS)

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

II B.Tech II Sem CSE-B:

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1	CAA-2	CIE-1	CIE-2	TIM (40M)
1	214G1A0564	NADIRA ANJUM J	5	0	10	10	13
2	214G1A0565	NAGA SHRAVAN B	7	8	18	17	26
3	214G1A0566	NAGATEJADEEP REDDY B	8	8	29	20	36
4	214G1A0567	NANDHINI M	8	7	21	21	29
5	214G1A0568	NANDINI B	5	6	17	16	24
6	214G1A0569	NARENDRA M	9	8	26	22	34
7	214G1A0570	NAVADEEP REDDY V	7	8	18	14	25
8	214G1A0571	NAVYASREE S	8	8	27	24	35
9	214G1A0572	NEERAJ P	8	8	22	18	30
10	214G1A0573	NEHA A	7	8	27	22	34
11	214G1A0574	PALLAVI B	0	8	16	7	19
12	214G1A0575	PALLAVI M (MANNELA)	8	9	29	25	37
13	214G1A0576	PALLAVI M (MEENUGA)	0	0	10	6	10
14	214G1A0577	PAVITRA K	8	6	16	8	23
15	214G1A0578	PRABHAS REDDY R	9	8	23	15	30
16	214G1A0579	PRASHANTH KUMAR REDDY P	7	8	22	23	31
17	214G1A0580	PUJAN KUMAR M	6	8	21	20	28
18	214G1A0581	RAMYASREE G	7	4	20	17	26
19	214G1A0582	RANGA SAHITHI C	9	8	23	22	32
20	214G1A0583	RAVITEJA M	8	6	11	15	22
21	214G1A0584	REVATHI B	8	8	16	15	24
22	214G1A0585	SAI DHANUSH D	9	8	17	20	28
23	214G1A0586	SAI HARITHA G	8	9	23	25	34
24	214G1A0587	SAI JAHNAVI G	8	9	20	21	30
25	214G1A0588	SAI MEGHANA REDDY G	6	8	16	21	27
26	214G1A0589	SAI PAVANI M	8	8	17	20	28
27	214G1A0590	SAI PRASANNA C	8	9	12	14	23
28	214G1A0591	SAI PREETHIKA G	8	9	19	20	29
29	214G1A0592	SAI SARANYA P	7	9	23	21	31
30	214G1A0593	SAMHITHA S	7	0	11	7	11
31	214G1A0594	SAMYU J N	8	8	20	16	28
32	214G1A0595	SASI VARUN KUMAR REDDY B	8	8	19	22	30
33	214G1A0596	SHAGUPtha NAAZ D	6	7	23	15	28
34	214G1A0597	SHARAN KUMAR C	8	8	12	21	28
35	214G1A0598	SHARON MELORA ANGEL Z	8	6	22	22	30
36	214G1A0599	SHASHIKALA B	8	8	20	15	27
37	214G1A05A0	SHEeba SHAIK G	8	7	23	22	31
38	214G1A05A1	SIREESHA P	8	8	20	24	32
39	214G1A05A2	SIVA MANIKANTA B	8	8	17	17	25



Srinivasa Ramanujan Institute of Technology

(AUTONOMOUS)

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Department of Computer Science and Engineering

S.NO.	ROLL NO.	NAME OF THE CANDIDATE	CAA-1	CAA-2	CIE-1	CIE-2	TIM (40M)
40	214G1A05A3	SNEHALATHA D	8	9	19	13	27
41	214G1A05A4	SOBITHA RANI G	8	9	27	24	35
42	214G1A05A5	SREEJA REDDY P	8	8	25	21	33
43	214G1A05A6	SUJITH A	8	8	13	16	24
44	214G1A05A7	SUMMIYA K	8	8	20	21	29
45	214G1A05A8	SUNIL KUMAR K	6	8	17	21	28
46	214G1A05A9	SURENDRA GOUD E	7	7	17	18	25
47	214G1A05B0	SURYA TEJA D	8	7	15	20	27
48	214G1A05B1	TARUN K	7	5	8	10	16
49	214G1A05B2	THRISHA A	8	8	23	23	31
50	214G1A05B3	THRISHA P	8	7	19	10	25
51	214G1A05B4	UDAYASREE S	8	8	19	22	30
52	214G1A05B5	VANITHA G	8	8	21	23	31
53	214G1A05B6	VARSHITHA B	8	8	22	22	30
54	214G1A05B7	VARSHITHA REDDY B	8	8	13	16	24
55	214G1A05B8	VARUN KUMAR REDDY B	8	0	11	2	14
56	214G1A05B9	VISWATEJA D	8	0	5	13	16
57	214G1A05C0	VYSHNAVIG	5	8	20	20	27
58	214G1A05C1	VYSHNAVIM	8	8	24	21	32
59	214G1A05C2	YASASWINI P	6	8	23	21	30
60	214G1A05C3	YASHEELA G	8	8	16	17	25
61	214G1A05C4	BINDU SAI S	8	9	21	23	32
62	214G1A05C5	PAVAN KUMAR REDDY K	5	8	8	8	15
63	214G1A05C6	SHILPA M	8	8	9	16	23
64	214G1A05C7	SREYA Y	8	9	22	26	34
65	214G1A05C8	UDAY KUMAR L	8	7	16	16	24
66	214G1A05C9	SUPREETH KUMAR REDDY U	8	7	5	7	15
67	224G5A0510	SAI SHANMUKHIN	7	8	24	17	31
68	224G5A0511	SHABHAREESH A	8	8	3	14	20
69	224G5A0512	SHAFIULLA K	7	8	20	18	28
70	224G5A0513	SHRAVAN KUMAR REDDY A	8	8	22	14	29
71	224G5A0514	TARUN KUMAR REDDY P	9	8	17	13	25
72	224G5A0515	VENKATA RANJITH KUMAR REDDY P	8	7	9	19	25



Srinivasa Ramanujan Institute of Technology

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Department of Computer Science and Engineering

19. Improvement analysis-week students (I & II mid marks analysis) & bright students:

S.No.	Hall Ticket No.	Name of the student	Mid-1	Mid-2
1	214G1A0502	ABHISHEK B S	13	16
2	214G1A0503	AL FARHEEN P	14	15
3	214G1A0506	ARJUNESWARA RAO K	15	15
4	214G1A0507	ASWARTHA REDDY S	13	23
5	214G1A0509	AYUB S	11	24
6	214G1A0524	DURGA BHAVANI V	12	13
7	214G1A0526	EZAAZ BASHA U	14	22
8	214G1A0534	HARSHA VARDHAN P	8	6
9	214G1A0536	HEMACHANDRA KIRAN SREENIVAS S	13	17
10	214G1A0540	JASWANTH REDDY M	8	15
11	214G1A0545	KOUSHIK G	10	14
12	214G1A0547	LAKSHMI NARASIMHA REDDY G	3	15
13	214G1A0551	LINGARAJU M	7	15
14	214G1A0552	LOKESH B	14	21
15	214G1A0554	MAHESH BABU M	5	10
16	214G1A0556	MANIDEEP SAI Y	13	0
17	214G1A0558	MOHAMMAD FAIZAAN SHAIK P	15	20
18	214G1A0563	MYTHREYA REDDY C	10	13
19	214G1A0564	NADIRA ANJUM J	10	10
20	214G1A0576	PALLAVI M (MEENUGA)	10	6
21	214G1A0583	RAVITEJA M	11	15
22	214G1A0590	SAI PRASANNA C	12	14
23	214G1A0593	SAMHITHA S	11	7
24	214G1A0597	SHARAN KUMAR C	12	21
25	214G1A05A6	SUJITH A	13	16
26	214G1A05B0	SURYA TEJA D	15	20
27	214G1A05B1	TARUN K	8	10
28	214G1A05B7	VARSHITHA REDDY B	13	16
29	214G1A05B8	VARUN KUMAR REDDY B	11	2
30	214G1A05B9	VISWATEJA D	5	13
31	214G1A05C5	PAVAN KUMAR REDDY K	8	8
32	214G1A05C6	SHILPA M	9	16
33	214G1A05C9	SUPREETH KUMAR REDDY U	5	7
34	224G5A0502	CHANDRASEKHAR R	15	18
35	224G5A0503	D PURUSHOTHAM	14	16
36	224G5A0507	JEEVAN KUMAR D	15	16



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S.No.	Hall Ticket No.	Name of the student	Mid-1	Mid-2
37	224G5A0511	SHABHAREESH A	3	14
38	224G5A0515	VENKATA RANJITH KUMAR REDDY P	9	19



20. Methodology to encourage bright students:

Student who scored more than 50% of marks in the I internal assessment test will be considered as a bright student. Conducted GATE/ Video lectures/other orientation classes student.

Videos	
Propositional Logic	https://www.youtube.com/watch?v=VUnhpVJTP3s&list=PLG9aCp4uE-s2ofKxNR2-uJk0Rq8jrcyIa&index=1&t=15s&pp=iAQB
Inference Rule	https://www.youtube.com/watch?v=KbU1dXGw1c8&list=PLG9aCp4uE-s2ofKxNR2-uJk0Rq8jrcyIa&index=2&pp=iAQB
Predicate Logic	https://www.youtube.com/watch?v=xIPJGkDTZMk&list=PLG9aCp4uE-s2ofKxNR2-uJk0Rq8jrcyIa&index=3&pp=iAQB
Basics of Graph Theory	https://www.youtube.com/watch?v=JqgdPH-PEIM&list=PLG9aCp4uE-s2ofKxNR2-uJk0Rq8jrcyIa&index=6&pp=iAQB
Degree Sequence and types of Graphs	https://www.youtube.com/watch?v=OBIMJvBbHbc&list=PLG9aCp4uE-s2ofKxNR2-uJk0Rq8jrcyIa&index=8&pp=iAQB



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21. Previous year University Exam Question papers:

Hall Ticket No.:

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SRIT R19

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech I Sem – Semester End Examinations – Supplementary – Jul 2022

DISCRETE MATHEMATICS

[194GA05301]

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART-A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is well formed formula?
 - Write in brief about the rules of inferences.
 - Define Equivalence relation.
 - What is a composition function?
 - When a group is said to be an abelian group?
 - Define Homomorphism.
 - Write in brief about the principle of inclusion.
 - Define generating function.
 - Define Euler Graph.
 - List different types of graphs.

PART-B

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

UNIT-1

- 2 a) Show that the following statement is a tautology. [5M]

$$(P \wedge (P \rightarrow Q)) \rightarrow Q$$
- b) Show that $R \Delta (P \vee Q)$ is a valid conclusion from the premises $P \vee Q$, $Q \rightarrow R$, $P \rightarrow M$ and $\neg M$. [5M]

(OR)

- 3 a) Show that the following statements are logically equivalent without using truth table. [5M]

$$(P \rightarrow Q) \wedge (P \rightarrow R) \leftrightarrow P \rightarrow (Q \wedge R)$$
- b) Determine the truth value of each of the following statements [5M]
- $6 + 2 = 7$ and $4 + 4 = 8$.
 - four is even.
 - $4 + 3 = 7$ and $6 + 2 = 8$.

UNIT-2

- 4 a) Let $X = \{1, 2, 3, 4, 5, 6, 7\}$ and $R = \{(x,y) / x-y \text{ is divisible by } 3\}$ in X . Show that R is an Equivalence Relation. [5M]
- b) Draw the Hasse diagram for the poset $(P(S), \subseteq)$, where $S = \{1, 2, 3, 6\}$. [5M]

(OR)

- 5 If $A = \{2, 3\}$, $B = \{-1, 2\}$ and $C = \{a, b\}$ verify that [10M]
- $A \times (B \cup C) = (A \times B) \cup (A \times C)$
 - $A \times (B \cap C) = (A \times B) \cap (A \times C)$

UNIT-3

- 6 Explain in brief about Euler's Theorem with Example? [10M]

(OR)

- 7 a) Let G be a group of order p , where p is a prime. Find all subgroups of G ? [5M]
- b) Explain in brief about Fermat's theorem? [5M]



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UNIT-4

- 8 a) 15 males and 10 females are members are seated in a round table meeting. How many ways they can seated if all the females seated together? [5M]
b) Write about sum rule and product rule with an example. [5M]
(OR)
9 a) Eight people enter an elevator at the first floor. The elevator discharges a passenger on each successive floor until it empties on the fifth floor. How Many different ways can this happen? [5M]
b) Find the sum of all 4 digit numbers that can be obtained by using the digits 2,3,5 and 7 (without repetition)? [5M]

UNIT-5

- 10 State the Krushkal's algorithm for finding Minimal Spanning Tree? Explain it with an Example. [10M]
(OR)
11 a) Write the rules for constructing Hamiltonian paths and cycles. [5M]
b) Show that the complete bi-partite graph $K_{3,3}$ is not planar graph. [5M]



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Department of Computer Science and Engineering

Hall Ticket No.:

SRIT R19

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech I Sem – Semester End Examinations – Supplementary – Dec 2022

DISCRETE MATHEMATICS

[194GA05301]

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART-A (Compulsory Question) ***

- 1 Answer the following: (10 X 02 = 20 Marks)
 - a) Is $-(P \wedge (P \vee Q)) \rightarrow Q$ a tautology or not?
 - b) Write the converse and inverse for $P \rightarrow Q$.
 - c) Identify the Properties in the given Relation $A=\{1,2,3,4\}$ and $R=\{(1,1), (1,2), (2,1), (2,2), (3,3), (4,4), (3,1), (1,3)\}$.
 - d) Define Lattice.
 - e) What is Group Homomorphism?
 - f) Find the GCD of 60 and 42?
 - g) Define generating function.
 - h) Write the major applications of Circular Permutations.
 - i) Define Hamiltonian Graph.
 - j) Differentiate Path and Circuit.

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

UNIT-1

- 2 a) Show that $R \rightarrow S$ can be derived from the Premises $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$ and Q ? [5M]
- b) Obtain principal disjunctive normal form of $(\neg P \vee Q)$? [5M]

OR

- 3 a) Prove the Validity of the following Statements using Predicate Calculus? [5M]
$$\begin{array}{c} \text{All men are Clever} \\ \text{Sachin is Man} \\ \hline \text{Therefore sachin is clever} \end{array}$$
- b) Explain the inference theory for predicate calculus. [5M]

UNIT-2

- 4 a) Illustrate various properties of Binary Relations with clear examples. [5M]
- b) Let $A=\{1,2,3,4,6,8,12\}$, define the partial ordering relation R by aRb if and only if a divides b . Draw the Hasse diagram for R . [5M]

OR

- 5 a) Given the functions defined by f and g find $(f \circ g)(x)$ and $(g \circ f)(x)$.
i) $f(x)=4x-1$, $g(x)=3x$ ii) $f(x)=5x+1$, $g(x)=2x-3$ [5M]
- b) Check whether the Poset $(S, /)$ is a distributive Lattice or not where $S=\{1,2,3,6\}$? [5M]

UNIT-3

- 6 a) Let $W=\{1, -1, i, -i\}$ and $*$ is a multiplication operation. Find whether $\langle W, * \rangle$ is a group or not. [5M]
- b) Prove that $\langle Z_5, +_5 \rangle$ is an abelian group of order 5. [5M]



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OR

- 7 Explain the Euclidean algorithm with example. [10M]

UNIT-4

- 8 a) Write about Sum rule and Product rule with an example. [5M]
b) Determine the Coefficient of X^9Y^3 in the expansion of $(x+2y)^{12}$? [5M]

OR

- 9 a) How many six character passwords in computer possible, if first 2 characters are Letters and others are digits? [5M]
b) Define Multinomial Theorem. Find number of integers less than 250 and divisible by 3 or 5 or 11? [5M]

UNIT-5

- 10 a) Prove that complete graph of 5 vertices is non-planar. [5M]
b) Define the following with examples:
(i) Directed Graph (ii) Non-directed Graph (iii) Simple Graph. [5M]

OR

- 11 a) How many vertices will the graph contain 6 edges and all vertices of degree 3. [5M]
b) Distinguish Depth First Search and Breadth First Search algorithms. [5M]



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SRIT R19

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

II B. Tech I Sem – Semester End Examinations – Supplementary – Jun 2023

DISCRETE MATHEMATICS

[194GA05301]

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART-A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
 - a) What is Conjunction? Give an example.
 - b) Define Disjunction. Give an example.
 - c) Define transitive relation. Give an example.
 - d) What is universal set and null set?
 - e) What is an algebraic system?
 - f) Write the properties of integers.
 - g) In how many ways can the letters of the word 'READER' be arranged?
 - h) Define combinations. Give an example.
 - i) Define planar graph. Give an example.
 - j) What is bipartite graph? Give an example.

PART-B

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

UNIT-1

- 2 a) Explain the well - formed formulas with an example. [5M]
b) Explain disjunctive normal Form. [5M]

OR

- 3 Explain the inference theory for predicate calculus. [10M]

UNIT-2

- 4 a) Explain transitive closure with an example. [5M]
b) Explain lattice and write its properties. [5M]

OR

- 5 What is relation? Explain the properties of binary relations with examples. [10M]

UNIT-3

- 6 Write the Euclidian algorithm with an example. [10M]

OR

- 7 Show that $\langle Z_5, + \rangle$ is a group. [10M]

UNIT-4

- 8 Explain sum rule and product rule with an example. [10M]

OR

- 9 a) Suppose that 200 faculty members can speak French and 50 can speak Russian, while only 20 can speak both French and Russian. How many faculty members can speak either French or Russian? [5M]

- 9 b) Explain pigeonhole principle with an example. [5M]

UNIT-5

- 10 Explain krushkal's algorithm with an example. [10M]

OR

- 11 Explain the matrix representation of graphs with example. [10M]



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

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SRIT R19

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech I Sem – Semester End Examinations – Regular – Mar 2021

DISCRETE MATHEMATICS

[194GA05301]

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART-A (Compulsory Question) ****

- 1 Answer the following: (10 X 02 = 20 Marks)
- a) Define Normal form.
 - b) Write in brief about the rules for predicate calculus.
 - c) List out the operations on binary sets.
 - d) What are the properties of binary relations?
 - e) Define abelian group.
 - f) Why do we need Partial ordered set?
 - g) What is pigeon hole principal?
 - h) Define Generating function.
 - i) What are the advantages of Prims algorithm?
 - j) What a given graph is said to be planar?

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

UNIT-1

- 2 a) Find the truth table for the propositional formula $(P \leftrightarrow Q) \leftrightarrow (Q \rightarrow P)$? [5M]
b) What is a Well-Formed Formula? What are rules of the Well-Formed Formulas? [5M]
(OR)
- 3 a) Obtain the PCNF of the following formula $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$ by using Truth Table. [5M]
b) Prove that the following argument is valid? [5M]
 $p \rightarrow q, \neg(q \vee r), \neg p$

UNIT-2

- 4 a) If $A = \{1, 2, 3\}$, $B = \{4, 5\}$. Find $A \times B$ and $B \times A$? [5M]
b) Let $X = \{1, 2, 3, 4, 5, 6, 7\}$ and $R = \{(x, y) / x-y \text{ is divisible by } 3\}$ in X . Show that R is an Equivalence Relation. [5M]
(OR)
- 5 a) Let $A = \{1, 2, 3, 4\}$ and $P = \{\{1, 2, 3\}, \{4\}\}$ be a partition of A . Find the equivalence relation determined by P ? [5M]
b) Draw the Hasse diagram of $(P(S), \leq)$, where $P(S)$ is power set of the set $S = \{a, b, c\}$? [5M]

UNIT-3

- 6 a) Let that $H = \{0, 2, 4\} \subseteq \mathbb{Z}_6$, check that $\langle H, +_6 \rangle$ is a sub group of $\langle \mathbb{Z}_6, +_6 \rangle$. [5M]
b) Describe in brief about the procedure for testing of primary numbers? [5M]
(OR)
- 7 a) Discuss in brief about Euclidean algorithm. [5M]
b) Show that the identity element in a group is unique. [5M]



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Department of Computer Science and Engineering

UNIT-4

- 8 a) In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together? [SM]
b) Find the number of positive integers less than are equal to 2076 and divisible by 3 or 4. [SM]
(OR)
9 a) In a birthday party, every person shakes hand with every other person. If there was a total of 28 handshakes in the party, how many persons were present in the party? [SM]
b) In how many ways can a committee of 5 teachers and 4 students be selected from 9 teachers and 15 students such that teacher A refuses if student B is in the committee. [SM]

UNIT-5

- 10 a) Write the rules for constructing Hamiltonian paths and cycles? [SM]
b) Prove that a connected plane graph with 7 vertices and $\text{degree}(V) = 4$ for each vertex V of G must have 8 regions of degree 3 and one region of degree 4? [SM]
(OR)
11 a) Show that a connected graph with n vertices has at least $n-1$ edges [SM]
b) How many edges does a graph have if it has vertices of degree 4,3,3,2,2? Draw such a graph? [SM]



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SRIT R20

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

II B. Tech II Sem – Semester End Examinations – Supplementary – Feb 2023

DISCRETE MATHEMATICS

[R204GA05401]

(Common to CSE, CSD & CSM)

Time: 3 hours

Max. Marks: 60

PART-A (Compulsory Question) ***

- 1 Answer the following: (05 X 02 = 10 Marks)
 - a) Show that the formula $Q \rightarrow (P \vee Q)$ is a tautology?
 - b) What is an equivalence relation?
 - c) Define Homomorphism.
 - d) In how many ways can 12 students be arranged in a circle?
 - e) Define Hamiltonian graph?

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

UNIT-1

- 2 a) Obtain PDNF $PV(\neg P \rightarrow (QV(\neg Q \rightarrow R)))$. [5M]
 - b) State and explain Duality Theorem. [5M]
- (OR)
- 3 a) State and explain the rules that can generate a well formed formula? [5M]
 - b) Show that $(\exists x)[P(x) \vee Q(x)] \rightarrow (\exists x)P(x) \vee \exists xQ(x)$ by using indirect proof. [5M]

UNIT-2

- 4 State and explain the principle of inclusion and exclusion along with suitable examples. [10M]
- (OR)
- 5 a) Define Lattice? Explain the properties of lattice? [5M]
 - b) Draw the Hasse diagram for $X = \{2, 3, 6, 24, 36, 48\}$ and relation \leq be such that $x \leq y$, if x divides y? [5M]

UNIT-3

- 6 a) State Fermat's theorem? Solve $4^{111} \bmod 11$ using Fermat's theorem? [5M]
 - b) State Euler's theorem? Solve $4^{\varphi(35)} \bmod 35$ using Euler's theorem? [5M]
- (OR)
- 7 a) Prove that $\langle \mathbb{Z}_5, +_5 \rangle$ is an abelian group of order 5. [5M]
 - b) Define the following terms [5M]
 - (i) Group
 - (ii) Abelian Group
 - (iii) Monoid

UNIT-4

- 8 a) How many ways 5 identical apples and 5 identical oranges be distributed among 5 people such that each person receive exactly 2 fruits? [5M]
 - b) Explain the basic rules of counting with suitable example. [5M]
- (OR)
- 9 a) Define multinomial theorem. Find number of integers < 250 and divisible by 3 or 5 or 11? [5M]
 - b) Find the coefficients of X^3Y^2 in the expansion of $(X+2Y)^{12}$. [5M]



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UNIT-5

- | | | |
|----|---|-------|
| 10 | Explain kruskal's algorithm with suitable example.
(OR) | [10M] |
| 11 | Define the following and give suitable example for each
i. Euler Circuit
ii. Hamiltonian Circuit. | [10M] |



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Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

Department of Computer Science and Engineering

Hall Ticket No.:

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SRIT R20

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

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

DISCRETE MATHEMATICS

[R204GA05401]

(Common to CSE, CSD & CSM)

Time: 3 hours

Max. Marks: 60

PART-A

(Compulsory Question)

- 1 Answer the following: (05 X 02 = 10 Marks)
- a) Define free and bound variable.
 - b) What is power set?
 - c) Define Epimorphism and Monomorphism.
 - d) How many 9 letter word can be formed by using the letters of the word DIFFICULT?
 - e) Define Hamiltonian graph.

PART-B

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

UNIT-1

- 2 a) Construct the truth table for the formula: $(P \wedge Q) \vee \neg(P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$. [5M]
b) Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$ using rules of inference. [5M]
- 3 Show that $\forall x[p(x) \vee q(x)] \rightarrow \forall x p(x) \vee \exists(x)q(x)$ by using indirect proof method. [10M]

UNIT-2

- 4 a) Construct the Hasse diagram representing the partial ordering $\{(a,b) \mid a \text{ divides } b\}$ on $\{1,2,3,4,6,8,12\}$. [5M]
b) List and explain any four properties of a binary relation. [5M]
- (OR)
- 5 a) How many natural numbers $N \leq 1000$ are divisible by 2,3 and 5. [5M]
b) Let $X = \{1,2,3,4\}$ and $R = \{(1,2), (2,3), (3,4)\}$ be a relation on X . Find the transitive closure of a relation. [5M]

UNIT-3

- 6 a) Find GCD(615, 1080) by using Euclidian algorithm. [5M]
b) Prove that $\langle Z_5, +_5 \rangle$ is an abelian group of order 5. [5M]
- (OR)
- 7 a) Write an algorithm for testing whether an integer $N > 1$ is prime or not. [5M]
b) If a and b are two positive integers then prove that $\text{GCD}(a,b) \cdot \text{LCM}(a,b) = a \cdot b$? [5M]

UNIT-4

- 8 a) Explain the basic rules of counting with suitable example. [5M]
b) In how many ways can 6 men and 6 women be seated in a row
i) if any person may sit next to any other?
ii) if men and women must occupy alternate seats? [5M]
- (OR)
- 9 a) Explain the Pigeon Hole principle with an example. [5M]
b) Find the coefficients of $x^9 y^3$ in the expansion of $(x + 2y)^{12}$. [5M]



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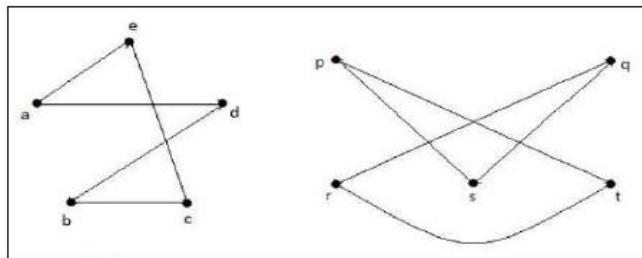
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UNIT-5

- 10 Explain Krushkal's algorithm with suitable example. [10M]
(OR)
11 a) Verify whether the given graphs are isomorphic or not. [5M]



- b) Explain the Pigeon Hole principle with an example. [5M]



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22. Course Outcome Attainment:



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23. University Result Analysis:

University Results Analysis - Report on COA

Number of Students Appeared	
Number of Students Passed	
Number of Students Failed	
Pass %	
Fail %	



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24. Course Material-Unit wise:

Unit-1:

https://drive.google.com/file/d/1YQiEYpPMf0ql3kS-x8DTdO-aq1_9Q80/view?usp=drive_web&authuser=0

Unit-2:

https://drive.google.com/file/d/1jA2F-BuooOAfOo1k09g-aBS2dp4_Em-m/view?usp=drive_web&authuser=0

Unit-3:

https://drive.google.com/file/d/1v60X15EHpcSfmIHh6qSAwMnUZQyhD2BN/view?usp=drive_web&authuser=0

Unit-4:

https://drive.google.com/file/d/1prZpXEZyzHvF-7-suaqWfajd3L9EthOw/view?usp=drive_web&authuser=0

Unit-5:

https://drive.google.com/file/d/1GiiAiuzqSATp_GvkGzVQa6lA3394xYNR/view?usp=drive_web&authuser=0



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25. Google Class Room Links:

II B.Tech – II Sem CSE-A:

<https://classroom.google.com/c/NTk2MTc5MDM5MTQ3?cjc=iojrlz2>

II B.Tech – II Sem CSE-B:

<https://classroom.google.com/c/NTk2MTgwMDI1ODA3?cjc=46f7mm2>