COURSE FILE

ON

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code –CS603PC

III B.Tech II-SEMESTER

A.Y.: 2022-2023

Prepared by

Mr. A.VIJAY KUMAR
Assistant Professor

Computer Science & Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH.
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 10.

PRINCIPAL
Sri Indu Institute of Engineering & Tech.
Sheriguda(Vill), Ibrahimpatnam
R.R. Dist. Telangana-501 510.

Sri Indu Institute of Engineering & Technology

Recognized Under 2(f) of UGC Act 1956
Approved by AICTE, New Delhi
Affiliated to JNTUH, Hyderabad.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic Year	2022-2023
Course Title	DESIGN AND ANALYSIS OF ALGORITHMS
Course Code	CS603PC
Programme	B.Tech
Year & Semester	III year II-semester
Branch & Section	CSE-A
Regulation	R18
Course Faculty	Mr. A.VIJAY KUMAR, Assistant Professor

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Sri Indu Institute of Engineering & Technology

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Affiliated to JNTUH, Hyderabad.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INSTITUTE VISION AND MISSION

Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:

IM1: To offer outcome-based education and enhancement of technical and practical skills.

IM2: To continuous assess of teaching-learning process through institute-industry

collaboration..

IM3: To be a centre of excellence for innovative and emerging fields in technology

development with state-of-art facilities to faculty and students fraternity.

IM4: To create an enterprising environment to ensure culture, ethics and social responsibility

among the stakeholders

B. Ratna Kaur

Computer Science & Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH.
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 1C.

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Sheriguda(Vill), Ibrahimpatnam
R.R. Dist. Telangana-501 510.

Main Road, Sheriguda, Ibrahimpatnam, R.R. Dist. 501 510.
Campus Ph:9640590999, 9347187999, 8096951507.

https://siiet.ac.in

Sri Indu Institute of
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT VISION AND MISSION

Vision:

To become a prominent knowledge hub for learners, strive for educational excellence with innovative and industrial techniques so as to meet the global needs.

Mission:

DM1 :   To provide ambience that enhances innovations, problem solving skills, leadership qualities, decision making, team-spirit and ethical responsibilities.

DM2 :   To impart quality education with professional and personal ethics, so as to meet the challenging technological needs of the industry and society.

DM3 :   To provide academic infrastructure and develop linkage with the world class organizations to strengthen industry-academia relationships for learners.

DM4 :   To provide and strengthen new concepts of research in the thrust area of Computer Science and Engineering to reach the needs of Government and Society.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES

PEO1: To develop trained graduates with strong academic and technical skills of modern computer science and engineering.

PEO2: To promote trained graduates with leadership qualities and the ability to solve real time problems using current techniques and tools in interdisciplinary environment.

PEO3: To motivate the graduates towards lifelong learning through continuing education and professional development.

PROGRAM SPECIFIC OUTCOMES

PSO1 : **Professional Skills:** To implement computer programs of varying complexity in the areas related to Web Design, Cloud Computing, Network Security and Artificial Intelligence.

PSO2: **Problem-Solving Skills**: To develop quality products using open ended programming environment.

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ROGRAMME OUTCOMES (POs)

PO1: **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: **Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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JAWAHARLALNEHRUTECHNOLOGICALUNIVERSITYHYDERABAD

B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

III YEAR I SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	CS501PC	Formal Languages & Automata Theory	3	0	0	3
2	CS502PC	Software Engineering	3	0	0	3
3	CS503PC	Computer Networks	3	0	0	3
4	CS504PC	Web Technologies	3	0	0	3
5		Professional Elective-I	3	0	0	3
6		Professional Elective-II	3	0	0	3
7	CS505PC	Software Engineering Lab	0	0	3	1.5
8	CS506PC	Computer Networks & Web Technologies Lab	0	0	3	1.5
9	EN508HS	Advanced Communication Skills Lab	0	0	2	1
10	*MC510	Intellectual Property Rights	3	0	0	0
		Total Credits	**21**	**0**	**8**	**22**

III YEAR II SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	CS601PC	Machine Learning	3	1	0	4
2	CS602PC	Compiler Design	3	1	0	4
3	CS603PC	Design and Analysis of Algorithms	3	1	0	4
4		Professional Elective–III	3	0	0	3
5		Open Elective-I	3	0	0	3
6	CS604PC	Machine Learning Lab	0	0	3	1.5
7	CS605PC	Compiler Design Lab	0	0	3	1.5
8		Professional Elective-III Lab	0	0	2	1
9	*MC609	Environmental Science	3	0	0	0
		Total Credits	**18**	**3**	**8**	**22**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

CS603PC:DESIGN AND ANALYSIS OF ALGORITHMS

III Year B.Tech. CSE II-Sem   **L T PC**

3   1 0 4

Prerequisites:

A course on "Computer Programming and Data Structures"

Course Objectives:

A course on "Advanced Data Structures"

Course Objectives:
• Introduces the notations for analysis of the performance of algorithms.
• Introduces the data structure disjoint sets.
• Describes major algorithmic techniques (divide-and-conquer, backtracking, dynamic programming, greedy, branch and bound methods) and mentions problems for which each technique is appropriate.
• Describes how to evaluate and compare different algorithms using worst-case, average-case, and best-case analysis.
• Explains the difference between tractable and intractable problems and introduces the problems that are P, NP, and NP-complete.

Course Outcomes:
- Ability to analyze the performance of algorithms.
- Ability to choose appropriate data structures and algorithm design methods for a specified application
- Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs

UNIT-I
Introduction: Algorithm, Performance Analysis-Space complexity, Time complexity, Asymptotic Notations-Big oh notation, Omega notation, Theta notation and Little oh notation.
Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT-II
Disjoint Sets: Disjoint set operations, union and find algorithms
Backtracking: General method, applications, n-queen's problem, sum of subsets problem, graph coloring

UNIT-III
Dynamic Programming: General method, applications-Optimal binary search trees, 0/1knapsackproblem, All pairs shortest path problem, Traveling sales person problem, Reliability design.

UNIT-IV
Greedy method: General method, applications-Job sequencing with deadlines, knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT-V
Branch and Bound: General method, applications - Travelling sales person problem, 0/1 knapsack

problem-LC Branch and Bound solution, FIFO Branch and Bound solution.

NP-Hard and NP-Complete problems: Basic concepts, nondeterministic algorithms, NP-Hard and NP-Complete classes, Cook's theorem.

TEXT BOOK:

1.Fundamentals of Computer Algorithms ,Ellis Horowitz, Satraj Sahni and Rajasekharan ,University Press.

REFERENCE BOOKS:

1. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.

2. Introduction to Algorithms ,second edition, T. H. Cormen, C.E.Leiserson, R.L.Rivest, and C.Stein,PHI Pvt.Ltd./Pearson Education.

3. Algorithm Design: Foundations, Analysis and Internet Examples, M.T. Goodrich and R.Tamassia,John Wileyand sons.

COURSE OUTCOMES

Course: Design and Analysis of Algorithms (C323)   **Class: III - II CSE-A**

After completing this course the student will be able to:

C323.1   Analyse the performance of an algorithm. (Analysis)

C323.2   Solve the problems using divide and conquer approach. (Application)

C323.3   Develop constraint satisfied solutions using backtracking(Synthesis)

C323.4   Evaluate feasible solutions using Greedy method. (Evaluation)

C323.5   Developing solutions to problems using dynamic programming(Synthesis)

C323.6   Define np hard and no complete problems. (Knowledge)

Mapping of course outcomes with program outcomes:

High -3   Medium -2   Low-1

PO/PSO/ CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C323.1	2	3	1	-	-	-	-	-	-	-	1	-	-	-
C323.2	1	2	-	-		-	-	-	-	-	-	-	-	1
C323.3	1	2	2	1	-	-	-	-	-	-	-	-	-	-
C323.4	2	2	-	1	-	-	-	-	-	-	1	-	-	-
C323.5	1	2	2	-	-	-	-	-	-	-	-	2	-	1
C323.6	1	1	-	-	-	-	-	-	-	-	-	-	2	-
C323	1.2	2	1	1	-	-	-	-	-	-	1	2	-	-

COURSE OUTCOMES

CO – PO / PSO Mapping Justification

Course: Design and Analysis of Algorithms (C323)   **Class: III - II CSE-A**

PROGRAMME OUTCOMES (Pos):

PO1: **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: **Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO11: **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

ROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1 **Professional Skills:** The ability to implement computer programs of varying complexity in the areas related to web design, cloud computing and networking.

PSO2 **Problem-Solving Skills:** The ability to develop quality products using open ended programming environment.

C323.1 Analyse the performance of an algorithm. (Analysis)

	Justification
PO1	Gain knowledge about time and space complexities
PO2	Analyze the time and space complexities for various algorithms
PO3	Design the better algorithms
PO11	Demonstrate knowledge and Understand it.

C323.2 Solve the problems using divide and conquer approach. (Application)

	Justification
PO1	Apply the gained knowledge to solve problems
PO2	Analyse the divide and conquer approach to solve the problems like binary search.
PSO 2	Develop algorithms for binary search, quick sort merge sort etc

C323.3 Develop constraint satisfied solutions using backtracking(Synthesis)

	Justification
PO1	Gains knowledge to solve condition based problems using backtracking
PO2	Analyse and construct problems like n queens, graph colouring etc
PO3	Design algorithms for n-queens, graph colouring etc
PO4	Research based knowledge and methods

323.4   Evaluate feasible solutions using Greedy method. (Evaluation)

	Justification
PO1	Gains knowledge to solve problems using greedy method
PO2	Analyse and develop solutions for problems like knapsack,minimum cost spanning tree using greedy method

PO4	Design algorithms for different problems.
PO11	Demonstrate knowledge and Understand it.

C323.5 Developing solutions to problems using dynamic programming(Synthesis)

	Justification
PO1	Gains knowledge on dynamic programming
PO2	problems like 0/1 knapack,all pairs shortest path etc
PO3	Develop the algorithms for 0/1 knapack,all pairs shortest path etc
PO12	Able to develop better algorithms in future
PSO2	Develop algorithms for binary search, quick sort merge sort etc

C323.6   Define np hard and no complete problems**.** (Knowledge)

	Justification
PO1	Gains some knowledge on np hard and np complete problems
PO2	Analyze and Develop conclusion.
PSO1	May find the better complexities for np problems

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2022-23

B. Tech./B. Pharm. III YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	09.09.2022	
2	1st Spell of Instructions (including Dussehra Recess)	09.09.2022	10.11.2022 (9 Weeks)
3	Dussehra Recess	03.10.2022	08.10.2022 (1 Week)
4	First Mid Term Examinations	11.11.2022	17.11.2022 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	24.11.2022	
6	2nd Spell of Instructions	18.11.2022	12.01.2023 (8 Weeks)
7	Second Mid Term Examinations	16.01.2023	21.01.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	23.01.2023	28.01.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	30.01.2023	
10	End Semester Examinations	30.01.2023	11.02.2023 (2 Weeks)

Note: No. of Working/ instructional days: 92

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	13.02.2023	
2	1st Spell of Instructions	13.02.2023	08.04.2023 (8 Weeks)
3	First Mid Term Examinations	10.04.2023	15.04.2023 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	22.04.2023	
5	2nd Spell of Instructions (including Summer Vacation)	17.04.2023	24.06.2023 (10 Weeks)
6	**Summer Vacation**	15.05.2023	27.05.2023 (2 Weeks)
7	Second Mid Term Examinations	26.06.2023	01.07.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	03.07.2023	08.07.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	08.07.2023	
10	End Semester Examinations	10.07.2023	22.07.2023 (2 Weeks)

Note: No. of Working/ instructional days: 90

REGISTRAR

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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TIME TABLE FOR A.Y 2022-23

Class: III-B. Tech CSE -A   Semester: II   LH. NO: A-201   W.E.F:13-02-2023

Period/	1	2	3	4	1:00-	5	6	7
Day	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00	1:30	1:30-2:20	2:20-3:10	3:10-4:00
Monday	DAA	CD	LIB	STM	L U N C H	STM LAB(BATCH-I)/CD LAB(BATCH-II)		
Tuesday	STM	DAA	DAA/ML(T)	ML		FIOT	STM	SPORTS
Wednesday	FIOT	CD	INT	STM		ML/CD(T)	CO-C/SS/DAA	
Thursday	FIOT	ML LAB(BATCH-I)/STM LAB(BATCH-II)				DAA	CD	STM
Friday	CD	COUN	ML	FIOT		ML LAB(BATCH-II)/CD LAB(BATCH-I)		
Saturday	CD	FIOT	CD/DAA(T)	DAA		ML		DAA

(T) – Tutorial (concern faculty)

Subject Code	Subject Name	Name of the Faculty	Subject Code	Subject Name	Name of the Faculty
CS601PC	Machine Learning	Mrs N Shilpa		Fundamentals of Internet of Things	Mrs. M.Sruthi
CS602PC	Compiler Design	Dr. Sasikumar D	CS604PC	Machine Learning Lab	Mrs N Shilpa/ K.Manmadha / V. Divya
CS603PC	Design and Analysis of Algorithms	Mr A Vijay Kumar	CS605PC	Compiler Design Lab	Dr. Sasikumar D / Ms K Mounika/ P.Swathi
CS615PE	Software Testing Methodologies	Mrs E Rupa	CS625PE	Software Testing Methodologies Lab	Mrs E Rupa/ Mrs S Akhila / Mrs. M.Sruthi
	CO-C/SS/DAA/ Cyber Security	Mrs. M.Sruthi	LIB	Library	Mrs K.Manmadha
Sports	Sports	Mr A Vijay Kumar	COUN	Counselling	Mrs.A.Sudha
Internet	Internet	Mrs.A.Sudha	CS601PC	Machine Learning	Mr M Dattatreya Goud (Adjunct)
			MC609	Environmental Science(LE)	Mr D Nagaraju

Class In-Charge : Mrs N Shilpa	Mentor 1 : Mrs N Shilpa	Mentor 2: Mrs E Rupa

Class In-Charge

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Department Computer Science and Engineering
2022-23; 2nd semester

Course Title	DESIGN AND ANALYSIS OF ALGORITHMS
Course Code	CS603PC
Programme	B.Tech
Year & Semester	III-year II-semester
Regulation	R18
Course Faculty	Mr. A.VIJAY KUMAR, Assistant Professor , CSE

LESSON PLAN

S.NO	Unit	TOPIC	Number of Sessions Planned	Teaching method/Aids	REFERENCE
1.		Introduction to Algorithms, specification of Algorithms	1	Black Board	T1
2.		Pseudo code	1	Black Board	T1
3.		Recursive Algorithms	1	Black Board	T1
4.		Performance Analysis-Space complexity	1	Black Board	T1
5.		**Tutorial1**(Time Complexity)	1	Black Board	T1
6.		Time Complexity using global method	1	Black Board	T1
7.	1	Time complexity using step count method	1	Black Board	T1
8.		Asymptotic Notations	1	Black Board	T1

9.		Randomised Algorithms	1	Black Board	T1
10.		**Tutorial2**(Quick sort)	1	Black Board	T1
11.		Divide and conquer general method	1	Black Board	T1
12.		Recurrence relations	1	Black Board	T1
13.		Binary search using divide and conquer	1	Black Board	T1
14.		Quick Sort using Divide and Conquer	1	Black Board	T1
15.		**Tutorial3**(Strassen matrix multiplication)	1	Black Board	T1
16.		Merge sort using Divide and Conquer	1	Black Board	T1
17.		Strassen's matrix multiplication using Divide and Conquer	2	Black Board	T1
18.		Disjoint sets and its operations union and find Algorithms	1	Black Board	T1
19.		Weighted union and collapsing find operations	1	Black Board	T1
20.	**2**	Articulation point	1	Block Board	T1
21.		Biconnected components	1	Black Board	T1
22.		**Tutorial4** (Backtracking General method)	1	Black Board	T1
23.		Hamiltonian cycle)	1	Block Board	T1
24.		8-Queens problem	1	Black Board	T1,W1
25.		**Tutorial 5**(Sum of subsets problem)	2	Black Board	T1
26.		Graph coloring problem	1	Black Board	T1
27.		Hamiltonian circuit problem	2	Black Board	T1
28.		Greedy method introduction	1	Black Board	T1
29.	**3**	Optimal binary search trees	2	Black Board	T1
30.		**Tutorial 6**(Knapsack problem)	1	Black Board	T1,W2

31.		Knapsack problem	2	Black Board	T1
32.		All pairs shortest path problem	2	Black Board	T1
33.		Travelling sales person problem	2	Black Board	T1
34.		Reliability design	2	Black Board	T1
35.		**Tutorial 7**(Single source shortest path)	1	Black Board	T1
36.		Greedy method:General method	1	Black Board	T1
37.		Job sequencing with dead lines	2	Black Board	T1
38.		Knapsack problem	2	Black Board	T1
39.		Minimum cost spanning trees	2	Black Board	T1
40.	**4**	**Tutorial 8**(Optimal binary search tree)	1	Black Board	T1
41.		Single sourse shortest path problem	2	Black Board	T1
42.		Branch and bound introduction and general method	1	Black Board	T2
43.		Travelling sales person problem	1	Black Board	T2
44.		0/1 knapsack problem-LC Branch and bound	2	Black Board	T2
45.		**Tutorial 9**(0/1 knapsack using LCBB)	2	Black Board	T2
46.	**5**	0/1 knapsack problem-FIFO Branch and bound	2	Black Board	T2
47.		Travelling sales person problem-row and column minimization	2	Black Board	T2
48.		Travelling sales person problem-Full and dynamic reduction	1	Black Board	T2
49.		NP hard and NP complete problems-Basic concepts	1	Black Board	T2
50.		Non deterministic algorithms	1	Black Board	T2

51.		**Tutprial 10**(NP hard and NP complete)	2	Black Board	T1
52.		Proving NP hard problems	1	Black Board	T2
53.		Proving NP complete problems	1	Black Board	T2
54.		Properties of NP complete and NP had problems	1	Black Board	T2
55.		Cook's theorem	1	Black Board	T2

TEXT BOOKS

T1   Fundamentals of computer algorithms,2ndedition,EllisHorowitz,SartajSahni and S.Rajasekharan,University press

T2   Design and Analysis of Algorithms,P.H.Dave,2ndEdition,pearson Education

REFERENCE BOOKS

R1   Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John Wiley and sons.

R2   Design and Analysis of Algorithms, S. Sridhar, Oxford Univ. Press

WEB REFERENCES

W1   https://www.tutorialspoint.com/design_and_analysis_of_algorithms/index.htm

W2   https://www.geeksforgeeks.org/fundamentals-of-algorithms/

LECTURE NOTES

Unit 1 link:

https://drive.google.com/file/d/1_iMtCwHpNmTu_sJcA_x5DHHzmR-wh-vL/view?usp=drive_link

Unit 2 link:

https://drive.google.com/file/d/1n1BNcjc_d6Vcix8-BZGG7MqKirQUU3LR/view?usp=drive_link

Unit 3 link:

https://drive.google.com/file/d/1aWImrWRwsEB94xoAmFBC9U1QhVl8ksp_/view?usp=drive_link

Unit 4 link:

https://drive.google.com/file/d/12RKvciAV7t43iygnXsl3-I70yDstklXV/view?usp=drive_link

Unit 5 link:

https://drive.google.com/file/d/1vT4t56jyFEaqDqay-NgFCAAecsMOw4UF/view?usp=drive_link

POWER POINT PRESENTATION

PPT link:

https://drive.google.com/file/d/14mHf2U5YEynqvAPGHYXO7-reW7aOBNeh/view?usp=sharing

Code No: 156AN

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, February- 2023
DESIGN AND ANALYSIS OF ALGORITHMS
(Common to CSE, ITE)

Time: 3 Hours   **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
　　　 ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
　　　 iii) In Part B, Answer any one question from each unit. Each question carries 10 marks
　　　　　 and may have a, b as sub questions.

PART – A

(25 Marks)

1.
a) What is an algorithm?   [2]
b)　　Explain about big-oh notation.   [3]
c)　　Define static space tree.   [2]
d)　　Write and explain general iterative backtracking method.   [3]
e)　　What is the time complexity of all pairs shortest path?   [2]
f)　　Explain about OBST.   [3]
g)　　What is Greedy method?   [2]
h)　　Distinguish between Prim's and Kruskal's algorithms.   [3]
i)　　Define branch and bound technique.   [2]
j)　　Explain about non-deterministic algorithms.   [3]

PART – B

(50 Marks)

2.a)　　Write and explain the general method of divide-and-conquer strategy.
　b)　　Derive the time complexity of Strassen's matrix multiplication.   [5+5]
OR
　3.a　　Write and explain recursive algorithm of binary search method.
　　b)　　What is space complexity? Explain with suitable examples.   [5+5]

　4.a　　Describe recursive formulation of backtracking technique.
　　b)　　How to implement disjoint sets? Explain.   [5+5]
OR
5.a)　　Explain about 4-queens problem with backtrack solution.
　b)　　Discuss about number of connected components of a graph using disjoint set union.   [5+5]

6. Use the function OBST to compute w(i, j), r(i, j), and c(i, j), $0 \le i < j \le 4$, for the identifier set

(a1, a2, a3, a4) = (do, if, int, while) with p(1:4) = (3, 3, 1, 1) and q(0:4) = (2, 3, 1, 1, 1). Using the r(i, j)'s construct the optimal binary search tree. [10]

OR

7. Discuss about all pairs shortest problem using dynamic programming. [10]

8. Compute a minimum cost spanning tree for the graph shown below using
   a) Prim's algorithm and
   b) Kruskal's algorithm. [5+5]
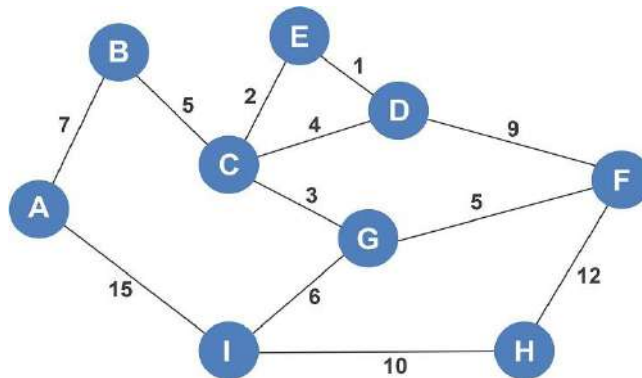
OR

9. Explain about single source shortest path problem in Greedy method. [10]

10. Describe LC branch and bound solution of 0/1 Knapsack problem in detail. [10]

OR

11. Explain the following:
    a) Nondeterministic knapsack algorithm
    b) FIFO branch and bound. [5+5]

-ooOoo-

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, February/March - 2022
DESIGN AND ANALYSIS OF ALGORITHMS
(Computer Science and Engineering)

Time: 3 Hours   Max. Marks: 75

Answer any five questions All questions carry equal marks

- - -

1.a) Discuss in detail various notations used for expressing the time complexity of algorithms, with examples.
 b) What is Performance Analysis? Explain Space Complexity and Time Complexity with examples.   [7+8]

2.a) Explain the process of merge sort by a list of any 11 integers (distributed randomly). Write the algorithm and analyze its time complexity.
 b) Write an algorithm to find matrix multiplication using Strassen's.   [8+7]

3.a) Describe the Backtracking technique to the m-coloring graph. Explain with an example.
 b) Write an algorithm of weighted union and also compute the time complexity of the same.   [8+7]

4.a) Draw the state space tree for 'm' coloring when n=3 and m=3.
 b) Write an algorithm for the 8-queens problem using backtracking.   [8+7]

5.a) Solve the solution for 0/1 knapsack problem using dynamic programming: (p1,p2,p3, p4) = (11, 21, 31, 33), (w1, w2, w3, w4) = (2, 11, 22, 15), M=40, n=4.
 b) State the principle of optimality in dynamic programming. How to apply this to the shortest path problem?   [8+7]

6.a) Explain about OBST.
 b) Write an algorithm of all pairs shortest path problem.   [8+7]

7. Explain the problem of job sequencing with deadlines by taking an example. Write the algorithm to solve the problem using the Greedy Method. Show how the algorithm solves the following job sequencing with deadlines problem.
   n = 4, (p1, p2, p3, p4) = (100, 10, 15, 27)   and   (d1, d2, d3, d4) = (2, 1, 2, 1)   [15]

8.a) Explain Cook's theorem with an example.
 b) Discuss the FIFO branch and bound.   [8+7]

---oo0oo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, August/September - 2021
DESIGN AND ANALYSIS OF ALGORITHMS
(Computer Science and Engineering)

Time: 3 Hours   **Max. Marks: 75**

Answer any five questions All questions carry equal marks

- - -

1.a)   Write and explain randomized quick sort algorithm.
 b)   Discuss about Big oh O, Omega Ω and Theta θ notations with examples.   [8+7]

2.a)   Using Merge sort, sort the following elements:
        310, 285, 179, 652, 351, 423, 861, 254, 450, 520
 b)   Analyze the computing time complexity of binary search algorithm.   [7+8]

3.a)   Show that depth first search can be used to find the connected components of
        anundirected graph.
 b)   Write an algorithm of n-queen's problem and explain.   [8+7]

4.   Suppose we start with n sets, each containing a distinct element.
        a) Show that if u unions are performed, then no set contains more than u+1 elements.
        b) Show that at most n – 1 unions can be performed before the number of setsbecomes 1.
        c) Show that if fewer than (n/2) unions are performed, then at least one set with a
        single element in it remains.
           [5+5+5]

5.a)   Solve the following 0/1 Knapsack Problem using dynamic programming n=4,
         m=30, (w1,w2,w3,w4) = (10,15,6,9) and (p1, p2, p3, p4) = (2,5,8,1).
 b)   Explain the concept of the traveling salesperson problem.   [7+8]

6.   Use the function OBST to compute w(i,j), r(i,j), and c(i,j), $0 \leq i < j \leq 4$, for the
        identifier set (a1, a2, a3, a4) = (do, if, int, while) with p(1 : 4) = (3, 3, 1, 1) and
        q(0:4)=(2,3,1,1,1). Using the r(i,j)'s construct the optimal binary search tree.   [15]

7.a)   Explain the general method of Greedy method.
  b)   Write and explain the Kruskal's algorithm with an illustrative example.   [7+8]

8.a)   Explain with respect to branch and bound 0/1 knapsack problem.
  b)   Discuss in detail about the classes of NP-hard and NP-complete.   [7+8]

---ooOoo---

SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

I- Mid Examinations, MAY-2023

Year &Branch: III CSE-A Date:27-05-2023

Subject: DAA Marks: 10 Time: 60 min

Answer any **TWO** Questions. All Question Carry Equal Marks 2*5=10 marks
(This question paper is prepared with Course Outcome and BT's mapping)

1. Explain the asymptotic notations? Explain with example. (5M) C323.1 **Comprehension**

2. Describe the general method of backtracking . (5M) C323.2 **Knowledge**

3. Explain union and find operations with suitable examples ? (5M) C323.3 **Comprehension**

4. a) Explain knapsack algorithm (2M) C323.4 **Comprehension**

   b). Find the optimal solution for given knapsac instance: (3M) C323.4 **Application**

   n=3,m=6,(p1,p2,p3)=(2,3,3) and (w1,w2,w3)=(1,2,4)

QUESTION PAPER MAPPING WITH BT'S

- Application 15%
- EVALUATION 25%
- Comprehension 60%

QUESTION PAPER MAPPING WITH CO'S

- C323.4 23%
- C323.1 22%
- C323.3 23%
- C323.2 32%
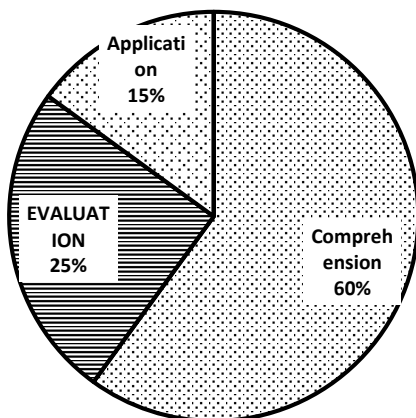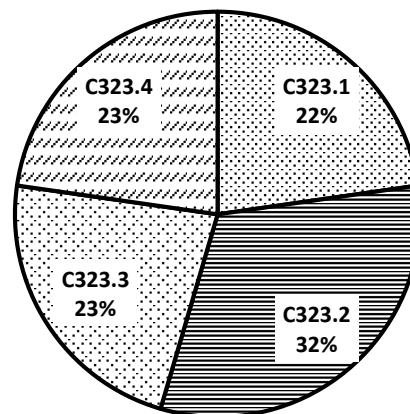
SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

I- Mid Examinations, MAY-2023

Year &Branch: III CSE-A   Date: 27-05-2023

Subject: DAA Marks: 10   Time: 60 min

Answer any **TWO** Questions. All Question Carry Equal Marks   2*5=10 marks

(This question paper is prepared with Course Outcome and BT's mapping)

1. Write and explain find algorithm with collapsing rule.   (5M)   C323.2 **Application**

2. a) Explain quicksort algorithm. (2M)   C323.2   **Knowledge**

   b) Sort the following elements using Quicksort: (3M)   C323.2   **Application**

      65 70 75 n80 85 60 55 50 45

3. Explain sum of subsets problem with n=6,w[1:6]=[5,10,12,13,15,18],m=30 .

                                                  (5M)   C323.3   **Comprehension**

4. a) Explain knapsack algorithm   (2M)   C323.4 **Comprehension**

   b). Find the optimal solution for given knapsac instance: (3M) C323.4   **Application**

   n=3,m=6,(p1,p2,p3)=(2,3,3) and (w1,w2,w3)=(1,2,4)

QUESTION PAPER MAPPING WITH BT'S

Comprehension 35%
Application 55%
EVALUATION 10%

QUESTION PAPER MAPPING WITH CO'S

C323.4 25%
C323.2 50%
C323.3 25%
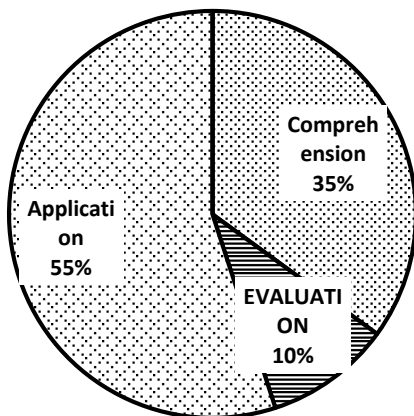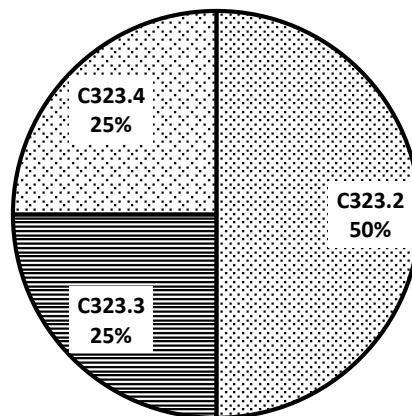
Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.TECH. III YEAR I SEM., I Mid Term Examinations, MAY– 2023
DESIGN AND ANALYSIS OF ALGORITHMS
Objective Exam

Name:_____   Hall Ticket No.

Answer All Questions. All Questions Carry Equal Marks.   Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1) which of the following asymptotic notation is the worst amoung all

a. o(n+9378)   b. o(n3)   c. n o(1)   d. 2 o(n)   [   ]

 2) Which of the following is incorrect? Algorithms can be represented: [   ]

a) as syntax   b) as programs   c) as flowcharts   d) as pseudo codes

3) This characteristic often draws the line between what is feasible and what is impossible.

a) Performance   [   ]
b) System Evaluation
c) Modularity
d) Reliability

4) The time complexity of quick sort   [   ]

a. O(n)   b. O(n2)   c. O(n log n)   d. O(log n)

5) A graph is a collection of nodes, called ...... And line segments called arcs or ...... that connect pair of nodes.   [   ]

a) Vertices, Paths   b) Vertices, Edges   c) graph node, edges   d) edges, vertices

6) In ...., search start at the beginning of the list and check every element in the list. [   ]

a) Binary search   b) Hash Search   c) Linear Search   d) Binary Tree Search

7) In the union/find algorithm,the ranks of the nodes on a path will increase monotonically from?
                                                                          [   ]

a) Leaf to root   b) Root to node   c)Root to leaf d)Left subtree to right subtree

8)The complexity of Binary search algorithm is   [   ]

a) O(n)   b) O(logn)   c) O(n2)   d) O(n log n)

9) which of the problems cannot be solved by Backtracking method?   [   ]

a. n-queens problem   b. Sum of subset problem

c. Hamiltonia circuit problem   d. Traveling salesman problem

10) The leaves in a state space tree represent only complete solution?   [   ]

a. True   b. False

II. Fill in the blanks:

1) The algorithms designed for_____.
2) If a problem can be solved by combining optimal solutions to non-overlapping
    problems, the strategy is called _____

3) Amount of memory used to store information of partially executed functions at the time of
function call is_____.

4) The time complexity of binary search algorithm for worst case is_____.

5) _____ depicts the running time between the upper bound.

6) Small 'oh' Notation (o) can also be defined as_____.

7) In worst case scenario, find algorithm requires _____

operations.

8) Each node in the state space tree defines_____.

9) If a problem can be broken into subproblems which are reused several times, the problem
possesses _____ property.

 10) _____Used to choose the best candidate to be added to the solution.

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

I- Mid Examinations, MAY-2023

Year &Branch: III CSE-A   Time:60mins

Subject**: DESIGN AND ANALYSIS OF ALGORITHMS**   max marks:10

ANSWER KEY

Descriptive Paper Key Link:

SET-1

 https://drive.google.com/file/d/1r--8-JNblajmEwPNXTZ_pDlmKdU7RgwV/view?usp=sharing

SET-2:

https://drive.google.com/file/d/1QgOWxIOGUi8SqN6YoXty8CJ85y_aQDa5/view?usp=sharing

OBJECTIVE KEY

I. Choose the correct alternative:
  1. B
  2. A
  3. A
  4. C
  5. B
  6. C
  7. A
  8. B
  9. D
  10. A

  Fill in the blanks:

  11. Solving a Problem
  12. "Divide and Conquer"
  13. Space Complexity
  14. O (logn)
  15. Big oh Notation
  16. Lower Bound
  17. More number of operations
  18. A Problem state
  19. Overlapping Sub Problems
  20. Solution set

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510
III Year II ndSemister

II- Mid Examinations, June-2023

Year &Branch: III CSE-A   Time:60mins

Subject**: DAA**   max marks:10   Date: 27-06-2023

Answer any **TWO** Questions. All Question Carry Equal Marks   **2*5=10 marks**

(This question paper is prepared with Course Outcome and BT's mapping)

1. Explain in Details the Reliability design Problem with Example ? C323.4

(**5M**)[Comprehension]

2. Explain the Minimum cost spanning trees and Job Sequencing with Deadlines problem
using Greedy Method?   C323.4   (**5M**)[Comprehension]

3. Define Branch-Bound and solve the 0/1 knapsack problem using FIFO Branch and Bound
,LC Branch and Bound ?   C323.5   **(5M)**[Knowledge]

4.State Cook's theorem and explain its importance. C323.6**(5M)**[Knowledge]

QUESTION PAPER MAPPING WITH BT'S
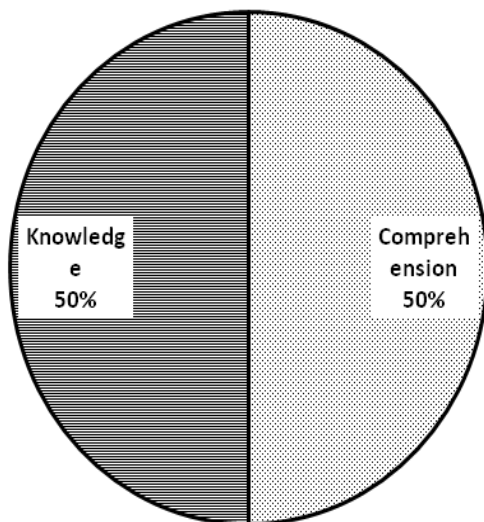
QUESTION PAPER MAPPING WITH CO'S
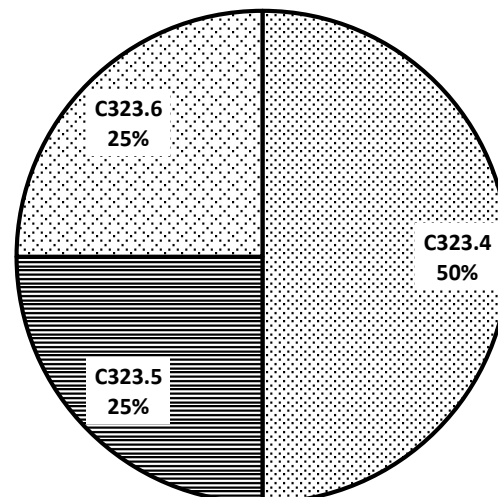
Knowledge 50%   Comprehension 50%

C323.6 25%   C323.4 50%   C323.5 25%

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510
III Year II ndSemister
II- Mid Examinations, June-2023

Year &Branch: III CSE-A   Time:60mins
Subject**: DAA**   max marks:10   Date: 27-06-2023

Answer any **TWO** Questions. All Question Carry Equal Marks   2*5=**10 marks**
(This question paper is prepared with Course Outcome and BT's mapping)

1. a) Define dynamic programming and Explain the All pairs shortest path problem with example**?** C323.5 **(3M)**[Knowledge]

   b)Solve the travelling sales person problem using dynamic programming ? C323.5 **(2M)**[Evaluation]

2. Explain the Single source shortest path problem and knapsack problem using greedy method ? C323.4 **(5M)**[Comprehension]

3. Define NP- hard problem? And Compare NP-hard and NP-completeness? C323.6

   (5M)[Knowledge]

4. Explain about Travelling sales person problem and find the minimum cost using Branch and bound **?** C323.6**(5M)**[Comprehension]

QUESTION PAPER MAPPING WITH BT'S

Knowledge 40%
Comprehension 50%
EVALUATION 10%

QUESTION PAPER MAPPING WITH CO'S

C323.4 25%
C323.6 50%
C323.5 25%

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.TECH. III YEAR II SEM., II Mid Term Examinations, June – 2023
Objective Exam
Design And Analysis of Algorithms

Name:_____ Hall Ticket No.

Answer All Questions. All Questions Carry Equal Marks.
Time: 20 Min. Marks: 10.

I. Choose the correct alternative:

1. Design And Analysis of Algorithms _____   [   ]

   a) Greedy algorithm   b) 2D dynamic programming
   c) 1D dynamic programming   d) Divide and conquer

2. Which of the following methods can be used to solve the Knapsack problem?. [   ]

   a) Brute force algorithm   b) Recursion

   c) Dynamic programming   d) Brute force, Recursion and Dynamic Programming

3. If a problem can be solved by combining optimal solutions to non-overlapping
   problems, the strategy is called _____   [   ]

   a) Dynamic programming   b) Greedy

   c) Divide and conquer   d) Recursion

4. When dynamic programming is applied to a problem, it takes far less time as Compared to other
   methods that don't take advantage of overlapping   Sub problems.   [   ]

   a) True   b) False

5. _____ is the class of decision problems that can be solved by non-deterministic
   polynomial algorithms   [   ]

   a) NP   b)P   c)Hard   d) Complete

6. Branch and bound is a _____   [   ]

   a) problem solving technique   b) data structure

   c) Sorting algorithm   d) type of tree

7. Which data structure is used for implementing a LIFO branch and bound strategy?
                                                                      [   ]

   a) stack   b) queue   c) array   d) linked list

8. Dijkstra's Algorithm is used to solve _____ problems.   [   ]

   a) All pair shortest path   b) Single source shortest path

c) Network flow   d) Sorting

9. Which of the following branch and bound strategy leads to breadth first search

                                                                [   ]

     a) LIFO branch and bound   b) FIFO branch and bound

     c) Lowest cost branch and bound   d) Highest cost branch and bound

10. Choose the correct statement from the following.   [   ]

     a) branch and bound is more efficient than backtracking

     b) branch and bound is not suitable where a greedy algorithm is not applicable

     c) branch and bound divides a problem into at least 2 new restricted sub problems

     d) backtracking divides a problem into at least 2 new restricted sub problems

II. Fill in the blanks:

1. Job sequencing with dead line is based on _____

2. Consider a complete graph G with 4 vertices. The graph G has _____ spanning trees.

3. If all the weights of the graph are positive, then the minimum spanning tree of the graph is a_____

4. A problem which is both_____ and _____is said to be NP complete

5. Travelling sales man problem belongs to which of the class_____

6. Dijkstra's Algorithm cannot be applied on _____

7. BFS uses_____ traversal.

8. The time complexity of the brute force algorithm used to solve the Knapsack problem_____.

9. _____is the most commonly used data structure for implementing Dijkstra's Algorithm.

10._____methods can be used to solve the Knapsack problem.

Sri Indu Institute of Engineering & Technology

Sheriguda (V), Ibrahimpatnam (M), R.R.Dist-501 510

II- Mid Examinations, June-2023

Year &Branch: III CSE-A   Time:60mins

Subject**: DESIGN AND ANALYSIS OF ALGORITHMS**   max marks:10

ANSWER KEY

Descriptive paper key link:

SET-1

https://drive.google.com/file/d/1wHxJo69y93-rQH48yrI27vVq1B-ksaIy/view?usp=sharing

SET-2

https://drive.google.com/file/d/1WNWl5G-e9TnMZLLL6SI2Y746C31cU7TR/view?usp=sharing

Objective Key:

I. Choose the correct alternative:

1. B
2. D
3. C
4. C
5. A
6. A
7. A
8. B
9. B
10. C

II. Fill in the blanks:

11. Greedy approach
12. 16
13. Minimum cost sub graph
14. NP, P
15. NP-complete
16. Graphs having negative weight function
17. Graph Traversal
18. O (n!)
19. Minimum priority queue
20. Brute force, Recursion and Dynamic Programming

ASSIGNMENT- 1   **SUBJECT: DAA**

Write any five questions.

1. Describe the performance analysis of algorithms.   (C323.1) knowledge

2. Explain about merge sort using divide and conquer approach.(C323.2) Comprehension

3. Explain about quick sort using divide and conquer approach.   (C323.2) Comprehension

4. Describe connected and bi-connected components   (C323.3) knowledge

5. Explain about 8-queens problem using backtracking.   (C323.3) comprehension

6. Explain about sum of subsets problem.   (C323.3) comprehension

7. Describe knapsack problem?   (C323.3) knowledge

8. Develop strassen's matrix multiplication.   (C323.3) Synthesis

DESIGN AND ANALYSIS OF ALGORITHMS

ASSIGNMENT- 1 KEY LINK :

https://drive.google.com/file/d/11qEzoBxTvR9QMZ6EuQZKLy43hqVy5Sdd/view?usp=sharing

ASSIGNMENT- 2   **SUBJECTS: DAA**

Write any five questions.

1. Explain in Details the Reliability design Problem with Example ? (C323.3)Comprehension

2. Explain the Minimum cost spanning trees and Job Sequencing with Deadlines problem using Greedy Method? (C323.4)Comprehension

3. Define Branch-Bound and solve the 0/1 knapsack problem using FIFO Branch and Bound ,LC Branch and Bound ? ? (C323.5)Remembering

4. State Cook's theorem and explain its importance. (C323.6)

5. Define dynamic programming and Explain the All pairs shortest path problem with example? (C323.5)Remembering

6. Explain the Single source shortest path problem and knapsack problem using greedy method? (C323.4)Comprehension

7. Define NP- hard problem? And Compare NP-hard and NP-completeness? (C323.6) Remembering

8. Explain about Travelling sales person problem and find the minimum cost using Branch and bound ? (C323.5)Comprehension

DESIGN AND ANALYSIS OF ALGORITHMS

ASSIGNMENT- 2 KEY LINK :

https://drive.google.com/file/d/1CpA3go53PvwpL9hg0ZTB0qo6jx8ncvcP/view?usp=sharing

Department Computer Science and Engineering
2022-23; 2nd semester

Course Title	DESIGN AND ANALYSIS OF ALGORITHMS
Course Code	CS603PC
Programme	B.Tech
Year & Semester	III-year II-semester
Regulation	R18
Course Faculty	Mr. A.VIJAY KUMAR, Assistant Professor , CSE

TUTORIAL TOPICS:

S.NO	Unit	TOPIC	Number of Sessions Planned	Teaching method/Aids	REFERENCE
1	1	**Tutorial1**(Time Complexity)	1	Black Board	T1
2		**Tutorial2**(Quick sort)	1	Black Board	T1
3		**Tutorial3**(Strassen matrix multiplication)	1	Black Board	T1
4	2	**Tutorial4**(Backtracking General method)	1	Black Board	T1
5		**Tutorial 5**(Sum of subsets problem)	2	Black Board	T1
6	3	**Tutorial 6**(Knapsack problem)	1	Black Board	T1
7	4	**Tutorial 7**(Single source shortest path)	1	Black Board	T1
8		**Tutorial 8**(Optimal binary search tree)	1	Black Board	T1
9	5	**Tutorial 9**(0/1 knapsack using LCBB)	2	Black Board	T2

| 10 | | **Tutprial 10**(NP hard and NP complete) | 2 | Black Board | T1 |

TEXT BOOKS

T1   Fundamentals of computer algorithms,2ndedition,EllisHorowitz,SartajSahni and S.Rajasekharan,University press

T2   Design and Analysis of Algorithms,P.H.Dave,2ndEdition,pearson Education

REFERENCE BOOKS

R1   Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John Wiley and sons.

R2   Design and Analysis of Algorithms, S. Sridhar, Oxford Univ. Press

Course Title	DESIGN AND ANALYSIS OF ALGORITHMS
Course Code	CS603PC
Programme	B. Tech
Year & Semester	III year II-semester, A sec
Regulation	R18
Course Faculty	Mr. A.VIJAY KUMAR, Assistant Professor , CSE

Weak Students:

S No	Roll no	No of backlogs	Internal-I Status	Internal-II Status
1	20X31A0503	6	16	18
2	20X31A0506	4	17	18
3	20X31A0507	6	17	17
4	20X31A0511	5	18	16
5	20X31A0520	4	20	21
6	20X31A0526	5	21	18
7	20X31A0531	5	22	20
8	20X31A0533	5	21	17
9	20X31A0554	4	17	18
10	20X31A0556	5	16	14
11	20X31A0558	6	14	16
12	20X31A0559	5	18	24

Advanced learners:

S No	Roll No	(SGPA)	Gate Material
1	20X31A0523	7.72	Asymptotic Notation / Recurrence Relation / Divide and Conquer/ Sorting/ Greedy Technique/ Minimum Spanning Tree/ Shortest Path/ Graph Traversal/ Dynamic Programming
2	20X31A0525	7.68	
3	20X31A0543	8.09	
4	20X31A0550	7.81	
5	20X31A0560	7.72	

BATCH CSE-III BTECH II SEM CSE-A RESULT ANALYSIS

ACADAMIC YEAR	COURSE NAME	NUMBER OF STUDENTS		QUESTION PAPER SETTING		PASS%
		APPEARED	PASSED	INTERNAL	EXTERNAL	
2022-23	DESIGN AND ANALYSIS OF ALGORITHMS	63	51	COURSE FACULTY	JNTUH	80.95%
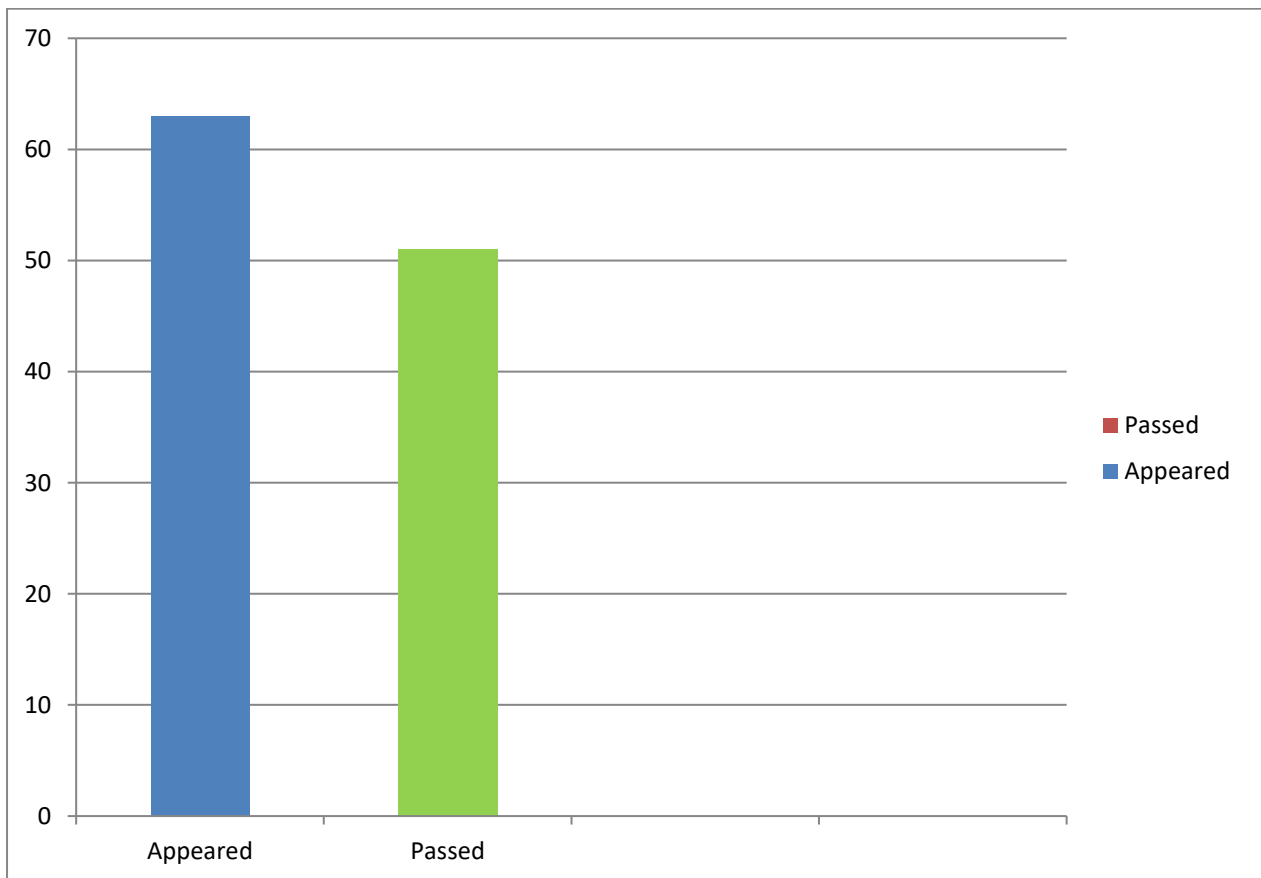
SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution under UGC)
Accredited by NAAC with A+ Grade, Recognized under 2(f) of UGC Act 1956
(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)
Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510
Website: https://siiet.ac.in/

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

REMEDIAL CLASSES TIME TABLE

A.Y 2022-23   SEMESTER-II

BRANCH/ SEC	MON 4.00 PM- 5.00 PM	TUE 4.00 PM-5.00 PM	WED 4.00 PM- 5.00 PM	THUR 4.00 PM- 5.00 PM	FRI 4.00 PM- 5.00 PM
II CSE-A	DM	JAVA	DBMS	BEFA	OS
II CSE-B	BEFA	DBMS	DM	OS	JAVA
II CSE-C	DBMS	OS	BEFA	JAVA	DM
III CSE-A	CD	ML	DAA	STM	FIOT
III CSE-B	DAA	FIOT	CD	ML	STM
III CSE-C	ML	STM	FIOT	CD	DAA
IVCSE-A	OB	TQM	DS	-	-
IV CSE-B	DS	OB	TQM	-	-
IV CSE-C	TQM	DS	OB	-	-

HOD
Computer Science & Engg. Dept.
SRI INDU INSTITUTE OF ENGG & TECH.
Sheriguda(V), Ibrahimpatnam(M), R.R.Dist-501 10.

PRINCIPAL
PRINCIPAL
Sri Indu Institute of Engineering & Tech
Sheriguda(Vill), Ibrahimpatnam
R.R. Dist. Telangana -501 510

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering

Course Outcome Attainment (Internal Examination-1)

Name of the faculty: A VIJAY KUMAR
Branch & Section: CSE- A

Academic Year: 2022-23
Examination: I Internal
Year: III   Semester: II

Course Name: DESIGN AND ANALYSIS OF ALGORITHMS

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2C	Q3a	Q3b	Q3c	Q4a	Q4b	Q4c	Obj1	A1
Max. Marks ==>		5			5			5			5			10	5
1	20X31A0501	3			3									8	5
2	20X31A0502	5			4									8	5
3	20X31A0503	3												8	5
4	20X31A0504	5			5									8	5
5	20X31A0506	5												7	5
6	20X31A0507	5												7	5
7	20X31A0508	5			5									7	5
8	20X31A0509	5			5									7	5
9	20X31A0510	5			4									7	5
10	20X31A0511				2			3						8	5
11	20X31A0512	5						5						8	5
12	20X31A0513	5			5									8	5
13	20X31A0514	5			5									8	5
14	20X31A0515	5			5									8	5
15	20X31A0516	5			5									7	5
16	20X31A0517	5			4									7	5
17	20X31A0518	5			4									7	5
18	20X31A0519	4			3									8	5
19	20X31A0520	5			2									8	5
20	20X31A0521	5												7	5
21	20X31A0522	5												8	5
22	20X31A0523	5						5						8	5
23	20X31A0524	5			2									6	5
24	20X31A0525	5			5									7	5
25	20X31A0526	5						4						7	5
26	20X31A0527	5						4						8	5
27	20X31A0528	5			5									7	5
28	20X31A0529	5			5									7	5
29	20X31A0530				4			5						10	5
30	20X31A0531				4			5						8	5
31	20X31A0532	5			3									8	5
32	20X31A0533	4			4									8	5
33	20X31A0534	5			5									9	5
34	20X31A0535	5						5						8	5
35	20X31A0536	5			5									9	5
36	20X31A0537	5			5									9	5

#	Roll No														
37	20X31A0538	5						4						7	5
38	20X31A0539	5			5									7	5
39	20X31A0540	5			3									7	5
40	20X31A0541	5			5									8	5
41	20X31A0542	5			5									8	5
42	20X31A0543	5			4									8	5
43	20X31A0544	5						5						8	5
44	20X31A0545				5			5						9	5
45	20X31A0546	4			2									7	5
46	20X31A0547	4			5									7	5
47	20X31A0548	5			4									9	5
48	20X31A0549	5			2									8	5
49	20X31A0550	5			4									7	5
50	20X31A0551	5			5									7	5
51	20X31A0552	5			5									7	5
52	20X31A0553	4			3									7	5
53	20X31A0554	5			1									6	5
54	20X31A0555	5			4									7	5
55	20X31A0556	1												10	5
56	20X31A0557	3						5						7	5
57	20X31A0558	1			3									5	5
58	20X31A0559	3			3									7	5
59	20X31A0560				5			5						7	5
60	21X35A0501	3			3									7	5
61	21X35A0502	5			5									7	5
62	21X35A0503	5			5									7	5
63	21X35A0504				5									7	5
Target set by the faculty / HoD		3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00
Number of students performed above the target		55	0	0	42	0	0	13	0	0	0	0	0	62	64
Number of students attempted		56	0	0	48	0	0	13	0	0	0	0	0	62	64
Percentage of students scored more than target		98 %			88 %			100 %						100%	100 %

CO Mapping with Exam Questions:

CO - 1	**Y**												y	y
CO - 2				**Y**			**Y**	**Y**					y	y
CO - 3										**Y**			y	y
CO - 4														
CO - 5														
CO - 6														

CO Attainment based on Exam Questions:

CO - 1	98%												100%	100%
CO - 2				88%									100%	100%
CO - 3													100%	100%
CO - 4														
CO - 5														
CO - 6														

CO	**Subj**	obj		Asgn	Overall		Level
CO-1	98%	100%		100%	99%		3.00
CO-2	88%	100%		100%	96%		3.00
CO-3		100%		100%	100%		3.00
CO-4							
CO-5							
CO-6							

Attainment Level	
1	40%
2	50%
3	>60%

Attainment (Internal 1 Examination) =   **3.00**

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering
Course Outcome Attainment (Internal Examination-2)

Name of the faculty :A VIJAY KUMAR   Academic Year:22-23

Branch & Section: CSE- A   Examination: II - Internal

Course Name: DESIGN AND ANALYSIS OF ALGORITHMS   Year: III   Semester : II

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2c	Q3a	Q3b	Q3c	Q4a	Q4b	Q4c	Obj4	A4
Max. Marks ==>		5			5			5			5			10	5
1	20X31A0501				5									8	5
2	20X31A0502				5			5						8	5
3	20X31A0503				5									8	5
4	20X31A0504	5			5									8	5
5	20X31A0506				5									8	5
6	20X31A0507	3			2									7	5
7	20X31A0508	5			4									7	5
8	20X31A0509				5						2			8	5
9	20X31A0510	3			4									8	5
10	20X31A0511				2						1			8	5
11	20X31A0512	3			4						3			8	5
12	20X31A0513	5			4									8	5
13	20X31A0514	5			5									8	5
14	20X31A0515	5			5									8	5
15	20X31A0516	5									5			8	5
16	20X31A0517	4			5									8	5
17	20X31A0518				5						3			8	5
18	20X31A0519				5						2			8	5
19	20X31A0520	5			3									8	5
20	20X31A0521	5			3									9	5
21	20X31A0522	5			5									8	5
22	20X31A0523	5			5									9	5
23	20X31A0524				3						4			9	5
24	20X31A0525				5						5			9	5
25	20X31A0526	5												8	5
26	20X31A0527				1						1			9	5
27	20X31A0528	2			2									8	5
28	20X31A0529				5			5						8	5
29	20X31A0530	2												9	5
30	20X31A0531	2			5									8	5
31	20X31A0532				5									7	5
32	20X31A0533	3			2									7	5
33	20X31A0534				5						3			9	5
34	20X31A0535	5			5									9	5
35	20X31A0536	5			4									8	5
36	20X31A0537				5						5			8	5
37	20X31A0538	4									2			8	5
38	20X31A0539				5						1			10	5

#	ID														
39	20X31A0540	2						3						8	**5**
40	20X31A0541	3						4						8	**5**
41	20X31A0542				5			5						9	**5**
42	20X31A0543				5			5						8	**5**
43	20X31A0544	5			5									8	**5**
44	20X31A0545	5			5									7	**5**
45	20X31A0546	2			3									7	**5**
46	20X31A0547	4			3									7	**5**
47	20X31A0548	5			3									8	**5**
48	20X31A0549				5						5			7	**5**
49	20X31A0550				5			5						8	**5**
50	20X31A0551	5									4			8	**5**
51	20X31A0552	4									3			7	**5**
52	20X31A0553	5			5									8	**5**
53	20X31A0554							5			1			7	**5**
54	20X31A0555				5			5						7	**5**
55	20X31A0556	2												7	**5**
56	20X31A0557	5			5									9	**5**
57	20X31A0558				4									7	**5**
58	20X31A0559				5									8	**5**
59	20X31A0560	5			5									9	**5**
60	21X35A0501	2												7	**5**
61	21X35A0502	4			4									7	**5**
62	21X35A0503				5						5			8	**5**
63	21X35A0504				5									8	**5**
Target set by the faculty / HoD		3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00
Number of students performed above the target		30	0	0	47	0	0	9	0	0	11	0	0	61	62
Number of students attempted		35	0	0	52	0	0	9	0	0	18	0	0	61	62
Percentage of students scored more than target		86%			90%			100%			61%			100%	100%

CO Mapping with Exam

Questions:

CO - 1													
CO - 2													
CO - 3													
CO - 4	**Y**											y	y
CO - 5			**Y**		**Y**							y	y
CO - 6									**Y**			y	y

% Students Scored >Target %	86%			90 %			100 %			61 %			100 %	100 %

CO Attainment based on Exam

Questions:

CO - 1															
CO - 2															
CO - 3															
CO - 4	86%													100 %	100 %
CO - 5				90 %			100 %							100 %	100 %
CO - 6										61 %				100 %	100 %

CO	Subj	obj		Asgn	Overall	Level
CO-1						
CO-2						
CO-3						
CO-4	86%	100 %		100%	95%	3.00
CO-5	95%	100 %		100%	98%	3.00
CO-6	61%	100 %		100%	87%	3.00

Attainment Level	
1	40%
2	50%
3	>60%

Attainment (Internal Examination-2)= **3.00**

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering
Course Outcome Attainment (University Examinations)

Name of theFaculty: A VIJAY KUMAR   Academic Year:2022-2023

Branch & Section: CSE- A   Year / Semester: III/II

Course Name: DESIGN AND ANALYSIS OF ALGORITHMS

S.No	Roll Number	Marks Secured		S.No	Roll Number	Marks Secured
1	20X31A0501	26		33	20X31A0534	26
2	20X31A0502	32		34	20X31A0535	13
3	20X31A0503	7		35	20X31A0536	40
4	20X31A0504	26		36	20X31A0537	26
5	20X31A0506	33		37	20X31A0538	26
6	20X31A0507	10		38	20X31A0539	26
7	20X31A0508	26		39	20X31A0540	30
8	20X31A0509	26		40	20X31A0541	28
9	20X31A0510	28		41	20X31A0542	38
10	20X31A0511	3		42	20X31A0543	47
11	20X31A0512	29		43	20X31A0544	52
12	20X31A0513	30		44	20X31A0545	40
13	20X31A0514	30		45	20X31A0546	26
14	20X31A0515	31		46	20X31A0547	34
15	20X31A0516	34		47	20X31A0548	30
16	20X31A0517	30		48	20X31A0549	37
17	20X31A0518	32		49	20X31A0550	29
18	20X31A0519	35		50	20X31A0551	27
19	20X31A0520	26		51	20X31A0552	30
20	20X31A0521	26		52	20X31A0553	32
21	20X31A0522	38		53	20X31A0554	22
22	20X31A0523	40		54	20X31A0555	31
23	20X31A0524	30		55	20X31A0556	23
24	20X31A0525	34		56	20X31A0557	26
25	20X31A0526	8		57	20X31A0558	3
26	20X31A0527	28		58	20X31A0559	21
27	20X31A0528	31		59	20X31A0560	37
28	20X31A0529	26		60	21X35A0501	0
29	20X31A0530	29		61	21X35A0502	28
30	20X31A0531	26		62	21X35A0503	34
31	20X31A0532	29		63	21X35A0504	22
32	20X31A0533	17				
Max Marks		75				

Class Average mark				Attainment Level	% students
		28		1	40%
Number of students performed above the target	36			2	50%
Number of successful students	63			3	>60%
Percentage of students scored more than target	57%				

Attainment level	**2**

Name of the faculty :	A VIJAY KUMAR		Academic Year:	2022-2023
Branch & Section:	CSE- A		Examination:	
Course Name:	DESIGN AND ANALYSIS OF ALGORITHMS		Year:	III
			Semester:	II

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	2.00	2.70
CO2	3.00		3.00	2.00	2.70
CO3	0.00		0.00	2.00	0.60
CO4		3.00	3.00	2.00	2.70
CO5		3.00	3.00	2.00	2.70
CO6		3.00	3.00	2.00	2.70
Internal & University Attainment:			2.50	2.00	
Weight age			70%	30%	
CO Attainment for the course (Internal, University)			1.75	0.60	
CO Attainment for the course (Direct Method)			2.35		

Overall course attainment level: 2.35

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering
Program Outcome Attainment

Name of theFaculty: A VIJAY KUMAR   Academic Year:2022-2023
Branch & Section: CSE- A   Year / Semester: III/II
Course Name: DESIGN AND ANALYSIS OF ALGORITHMS

Mapping of course outcomes with program outcomes:

High -3   Medium -2   Low-1

PO/PSO/ CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
C323.1	2	3	1	-	-	-	-	-	-	-	1	-	-	-
C323.2	1	2	-	-		-	-	-	-	-	-	-	-	1
C323.3	1	2	2	1	-	-	-	-	-	-	-	-	-	-
C323.4	2	2	-	1	-	-	-	-	-	-	1	-	-	-
C323.5	1	2	2	-	-	-	-	-	-	-	-	2	-	1
C323.6	1	1	-	-	-	-	-	-	-	-	-	-	2	-
C323	1.2	2	1	1	-	-	-	-	-	-	1	2	-	-

Attendance Register

https://drive.google.com/file/d/1eDtHubDxQlYXRDcwS8HsZDf_KgDlbMsB/view?usp=sharing