Lecture Plan 1

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Introduction, Union and find operations, algorithms for find and union, Collapsing rule and weighted union, Tarjan lemma	**Time Allotted:-**
1.	Introduction Syllabus and Books discussion .Analysis and Design of Algorithm consists of algorithm construction and calculating its complexity.	15
2	Division of the Topic Introduction, Union and find operations, algorithms for find and union, Collapsing rule and weighted union, Tarjan lemma	25
3.	Conclusion Algorithm may be written in different ways.	5
4	Question / Answer 1. What is Algorithm? 2. Why one algorithm is better than other?	5

Assignment to be given:-

Applications of union of trees.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 2

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Graphs, Introduction, Definition, Graph Represention : Adjacency list, Multilist	**Time Allotted:-**
1.	Introduction Graph is a non-linear data structure.	15
2	Division of the Topic Definition, Graph Represention : Adjacency list, Multilist	25
3.	Conclusion Graphs are very useful in certain real life applications.	5
4	Question / Answer 1. What is graph? 2. Define graph mathematically. 3. Describe various graph representations..	5

Assignment to be given:-
Write an algorithm for traversing of graph.

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 3

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** sorting and searching algorithms and their analysis in terms of space and time complexity.	**Time Allotted:-**
1.	Introduction Searching is a technique to find out position of given element in given list..	5
2	Division of the Topic sorting and searching algorithms and their analysis in terms of space and time complexity.	25
3.	Conclusion Different searching and sorting techniques has different complexity..	5
4	Question / Answer 1. Difference between linear search and binary search. 2. Comparison of different sorting algorithms.	15

Assignment to be given:-
Write an algorithm for linear search..

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.
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Lecture Plan 4

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Concept of structures and unions.	**Time Allotted:-**
1.	Introduction Structure and union are used to store different types of elements collectively. Declaration of structure and union.(have already learned in previous semester)	5
2	Division of the Topic Concept of structures and unions. Accessing structure elements . Concept structure in a union and vice – versa	20
3.	Conclusion Application of structure in creation of file So, structure requires more memory than union.	15
4	Question / Answer 1. Give one example to show the difference between structure and union. 2. Difference of array and structure.	10

Assignment to be given:-

Write a algorithm to sort list of student structures on basis of their roll no.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 5

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Divide and conquer : General Method	**Time Allotted:-**
1.	Introduction It splits the input into two subproblems of the same kind as the original problem.	15
2	Division of the Topic General Method Example of the method Complexity	25
3.	Conclusion This method depends on recursion as there is a no. of repetition of same procedure.	5
4	Question / Answer 1. Describe divide and conquer using real time example. 2. Limitation of this method.	5

Assignment to be given:-

1. Write an algorithm to implement divide and conquer.
2. Write a recursive procedure to use it.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 6

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Searching and Sorting Algorithms	**Time Allotted:-**
1.	Introduction Algorithms are based on divide and conquer.	10
2	Division of the Topic Binary search Method Binary search algorithm Complexity	20
3.	Conclusion Binary search is faster than linear search..	5
4	Question / Answer 1. what is the limitation of binary search. 2. Why this method is based on divide and conquer.	15

Assignment to be given:-

Write a program to find for binary search based on new algorithm.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 7

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Searching and Sorting Algorithms	**Time Allotted:-**
1.	Introduction Algorithms are based on divide and conquer	5
2	Division of the Topic Merge sort Method Merge sort algorithm	25
3.	Conclusion Merging two sorted lists automatically gives sorted list.	5
4	Question / Answer 1. Is merging of arrays giving good results? 2. Try to write non recursive merging algo.	10

Assignment to be given:-

Write a program to implement a merge sort.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 8

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Searching and Sorting Algorithms	**Time Allotted:-**
1.	Introduction Fastest sorting algorithm gives the running time nlogn.	15
2	Division of the Topic Quick sort method Quick sort algo Selection sort method and algo	25
3.	Conclusion Quick sort is better for huge data.	5
4	Question / Answer 1. Give two differences between quick sort and merge sort..	5

Assignment to be given:-

Write a program for quick sort.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 9

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - I**

COURSE CODE: - CSE-305-F

S. No.	**Topic: -** Strassen's matrix multiplication algorithms and analysis of algorithms for these problems.	**Time Allotted:-**
1.	Introduction The divide and conquer strategy suggests another way to compute the product of two nxn matrices	15
2	Division of the Topic Strassen's matrix multiplication Algorithms analysis	25
3.	Conclusion Strassen's methods gives faster result.	5 5
4	Question / Answer 1. Compare strassen's method with ordinary matrix multiplication method. 2. write an algo for this method.	

Assignment to be given:-

Write a program for the algo said above.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 10

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :** Greedy Method: General method ,knapsack problem	**Time Allotted:-**
1.	Introduction The greedy method suggests that one can devise an algorithm that works in stages, considering one input at a time.	15
2	Division of the Topic The Greedy Method. Greedy algotithm. knapsack problem	25
3.	Conclusion It gives a new consideration of step by step methods.	5
4	Question / Answer 1. Write down all algorithms which are meant for performing operations on greedy method 2. Revision on Previous methos.	5

Assignment to be given:-
Write a program for greedy algorithm.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 11

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** job sequencing with dead lines,	**Time Allotted:-**
1.	Introduction Given n jobs, There is a deadline for each job. Job must be completed within given dealine..	15
2	Division of the Topic Method Example Algorithms.	25
3.	Conclusion So many feasible solutions are available. No algo to get the optimal one.	5
4	Question / Answer 1. Write an algorithm for jobsequencing.	5

Assignment to be given:-

Try to write algo for optimal solution.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 12

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** minimum spanning trees	**Time Allotted:-**
1.	Introduction Spanning tree is a tree which contains all the nodes and some of the edges of graph.	15
2	Division of the Topic Definition Minimum cost spanning tree Prims algorithm Kruskal algorithm	25
3.	Conclusion Two algorithms give the same result .	5 5
4	Question / Answer 1. compare prims and kruskal algorithms. 2. Try to write recursive algo.	

Assignment to be given:-

Write an algorithm to implement both methods in one.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 13

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** single souce paths and analysis of these problems	**Time Allotted:-**
1.	Introduction Graph can be used to represent the highway structure of a state or country with vertices representing cities and edges representing sections of highway.	15
2	Division of the Topic Single source shortest paths Greedy algo to generate the shortest path	25
3.	Conclusion Solves the real life problems of shortest paths.	5
4	Question / Answer 1. Write down algorithm for shortest path.	5

Assignment to be given:-
Nil

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 14

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :- Dynamic Programming:** General method,	**Time Allotted:-**
1.	Introduction Dynamic programming is an algorithm design method that can be used when .the solution to a problem can be viewed as the result of a sequence of decisions.	15
2	Division of the Topic Examples- knapsack, optimal merge pattern, shortest path, etc.	25
3.	Conclusion Gives better strategy..	5
4	Question / Answer 1. Give any two applications of dynamic programming.	5

Assignment to be given:-
Nil

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 15

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** optimal binary search trees	**Time Allotted:-**
1.	Introduction In a general situation we can expect different identifiers to be searched for with different frequencies.	15
2	Division of the Topic Possible BinaryTrees Binary search tree Algorithm OBST	25
3.	Conclusion Tree is a nonlinear data structure having left child and right child. The binary tree is used since it can be maintained easily in the computer.	5 5
4	Question / Answer 1. Define tree with example. Also mention various types of trees. 2. Difference between tree and a binary tree.	

Assignment to be given:-
Write a program in to find out minimum cost BST.
Write the no. of times a number occurs in the tree.

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 16

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** O/I knapsack	**Time Allotted:-**
1.	Introduction A solution to the knapsack problem can be obtained by making a sequence of decisions on the variables x1,x2,x3…..xn.	15
2	Division of the Topic Knapsack problem Algorithms .	25
3.	Conclusion For the same problem we can have different algorithms..	5
4	Question / Answer 1. Write down the whole procedure step by step for knapsack solution	5

Assignment to be given:-

Nil

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 17

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - II**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** the traveling salesperson problem.	**Time Allotted:-**
1.	Introduction the traveling salesperson problem is to find a tour of minimum cost.	15
2	Division of the Topic Problem statement Solution .	25
3.	Conclusion Minimum cost path for the salesperson is available.	5
4	Question / Answer 1. Mention some of the applications of traveling salesman problem. 2. write an algorithm.	5

Assignment to be given:-
Write an algorithm to find best way of tour..

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 18

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :- Back Tracking:** General method,	**Time Allotted:-**
1.	Introduction - The basic idea behind backtracking is to go through a path and if doesn't meet to solution than track back and check for different path..	15
2	Division of the Topic The general method Brute force approach	25
3.	Conclusion Gives better idea for problem with a no. of path exist..	5
4	Question / Answer Illustrate the concept of brute force with suitable example.	5

Assignment to be given:-

Write an algorithm to implement this approach.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 19

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** 8 queen's problem	**Time Allotted:-**
1.	Introduction The problem is to place eight queens on an 8x8 chessboard so that no two attack.	15
2	Division of the Topic Problem statement Solution algorithm	25
3.	Conclusion This problem is a real life problem.	5
4	Question / Answer 1. What is 8-queen problem? 2. Write down two applications for it.	5

Assignment to be given:-

Nil

Reference Readings:-

Data Structures – Schaum's series

Lecture Plan 20

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** graph coloring,	**Time Allotted:-**
1.	Introduction A graph G consists of two things: a. nodes b. edges The general idea behind graph coloring is to discover whether the nodes of G can be colored in such a way that no two adjacent nodes have the same color.	15
2	Division of the Topic Problem statement Planner graph representation algorithm	25
3.	Conclusion A graph can be used to solve many problems which we face in our daily life. The graph coloring uses a queue as an auxiliary structure to hold nodes for future processing.	5
4	Question / Answer 1. How many types of graphs are there? 2. What are the other options available for coloring a graph.	5

Assignment to be given:-
Write an algorithm for Graph coloring.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 21

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Hamiltonian cycles, analysis of these problems	**Time Allotted:-**
1.	Introduction A Hamiltonian cycle is a round-trip path along n edges of G that visit every vertex once.	15
2	Division of the Topic Definitions Examples Algorithm.	25
3.	Conclusion Hamiltonian cycle is used to find reachability of one node from another with number of edges. It is also used to find whether a graph is connected or not.	5
4	Question / Answer 1. Difference between connected tree and strongly connected tree. 2. Application of MST.	5

Assignment to be given:-

Write an algorithm to create MST for a graph.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 22

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :- Branch and Bound:** Method,	**Time Allotted:-**
1.	Introduction The term branch and bound refers to all state space search methods in which all children of the E-node are generated before any other live node can become the E-node.	15
2	Division of the Topic The method Least cost search The 15 puzzle	25
3.	Conclusion Comparison of various branch & bound algorithms. Time complexity of the algorithm.	5 5
4	Question / Answer 1. What are the applications of branch and bound algorithm. 2. Do all the algorithm work for both directed graph and undirected graph.	

Assignment to be given:-
Application of graph in real situations.

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 23

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** O/I knapsack using b&b	**Time Allotted:-**
1.	Introduction The problem can be solved using b&b method.	15
2	Division of the Topic Problem statement B&B solution Algorithm	25
3.	Conclusion Efficient technique where the time taken to find solution doesn't depend on the the element.	5
4	Question / Answer 1. Compare all the method to solve the problem 2. Write down some of the techniques	5

Assignment to be given:-
Explain why B&B is efficient?

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 24

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** traveling salesperson problem using B&B	**Time Allotted:-**
1.	Introduction the traveling salesperson problem is to find a tour of minimum cost.	15
2	Division of the Topic Problem statement B&B solution Algorithm	25
3.	Conclusion Time complexity is an important constraint while designing efficient algorithm. Generally it is observed that if we try to reduce the time for an algorithm space requirement will increase.	5
4	Question / Answer 1. Find out space and time complexity for the algorithm.	5

Assignment to be given:-

Compare the two methods of solving traveling salesman problem.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 25

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** efficiency considerations.	**Time Allotted:-**
1.	Introduction One can pose several questions concerning the performance characteristics of B&B algorithms.	15
2	Division of the Topic Questions regarding performance. Theorems	25
3.	Conclusion Comparison between best, average and worst case analysis.	5
4	Question / Answer 1. Give one real time example for B&B. 2. Take one example and find out , average and worst case.	5

Assignment to be given:-

Describe various performance measures.

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 26

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Techniques for algebraic problems	**Time Allotted:-**
1.	Introduction A system that allows for the manipulation of mathematical expressions is called a MSM.	15
2	Division of the Topic The general Method Examples	25
3.	Conclusion All the methods perform well but we have studied advantages and disadvantages of all of them.	5
4	Question / Answer 1. Which one is best according to you? 2. Find out the complexity of MSM methods.	5

Assignment to be given:-

Write an algorithm to implement MSM..

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Doc. No.: DCE/0/15
Revision :00

Lecture Plan 27

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - III**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** some lower bounds on parallel computations.	**Time Allotted:-**
1.	Introduction Deriving good lower bounds is often more difficult than devising efficient algorithms.	15
2	Division of the Topic Comparison trees Oracles and advisory arguments.	25
3.	Conclusion Difficult to implement.	5 5
4	Question / Answer Describe various method of tree comparison.	

Assignment to be given:-

Nil

Reference Readings:-

The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 28

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit - IV**

COURSE CODE: - CSE-305-F

S. No.	**Topic :- NP Hard and NP Complete Problems:** Basic concepts,	**Time Allotted:-**
1.	Introduction We are concerned with with the distinction between problems which can be solved by a polynomial time and not.	15
2	Division of the Topic NP-hard Problems NP-Complete problems Algorithms	25
3.	Conclusion Gives two classes of problems..	5
4	Question / Answer. Differentiate between Np-hard and NP-complete problems.	5

Assignment to be given:-

Write a short note on Class of problems

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.

Lecture Plan 29

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit – IV**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** Cook's theorem, NP hard graph and NP scheduling problems	**Time Allotted:-**
1.	Introduction Cook's theorem states that satisfiability is in P iff p=np..	15
2	Division of the Topic Cook's Theorem NP-hard graph NP-scheduling problems	25
3.	Conclusion NP-hard problems can be solved with a no.techniques.	5
4	Question / Answer 1. State and prove cook's theorem.	5

Assignment to be given:-

Nil

Reference Readings:-

Data Structures – Schaum's series

Lecture Plan 30

FACULTY: Ms Priyanka Mahani **SEMESTER: - VIII** **CLASS: - ECS**

SUBJECT: - : Analysis and Design of Algorithms **Unit – IV**

COURSE CODE: - CSE-305-F

S. No.	**Topic :-** some simplified NP hard problems.	**Time Allotted:-**
1.	Introduction Different types of NP-hard problem are there.	15
2	Division of the Topic CNF Generating optimal code	25
3.	Conclusion Some decision problems are NP-complete..	5
4	Question / Answer 1. Describe some simplified NP-hard problems.	5

Assignment to be given:-
Nil

Reference Readings:-
The Design and Analysis of Computer Algorithm – Aho A.V. Hopcraft.