S. B. Roll. No.....

ANALYSIS AND DESIGN OF ALGORITHM
6th Exam/CSE/4495/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION A

Q1. Do as directed. **15x1=15**

a. Write various rules to write an algorithm.
b. What is amortized cost?
c. What is in-place sorting algorithm?
d. Expand DFS.
e. Define Binary Search Tree.
f. What are various types of heap?
g. Define Complexity.
h. Bubble sort is also called_____
i. Prim's algorithm is also called_____
j. What is principal of optimality?
k. Where dynamic programming can be applied?
l. In which approach, fractional knapsack is used?
m. What is source and sink?
n. What are the applications of minimum spanning tree?
o. Space complexity of depth first search algorithm is_____

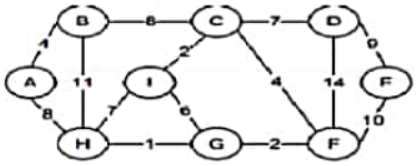
SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. What do you mean by divide and conquer? What are its advantages and disadvantages?
ii. What is binary search? Write algorithm? Discuss complexity of binary search?
iii. What is job scheduling? In the following data, using job scheduling method, maximize the profit by completing as many jobs as possible

Job	a	b	c	d	e	f	g	h	I	J
Deadline	9	2	5	7	4	2	5	7	4	3
Profit	15	2	18	1	25	20	8	10	12	5

iv. Explain BFS algorithm with an example? Denote its time complexities.
v. What is asymptotic analysis? Explain various asymptotic notations?
vi. What is a minimum spanning tree? Draw the minimum spanning tree correspond to following graph using Prim's algorithm.



vii. Write algorithm Selection sort? What is its complexity? Explain
viii. What are the differences between greedy approach and dynamic programming?

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain quick sort algorithm? Write complexity analysis of quick sort?
b. Explain Floyd warshall algorithm in detail with example?
c. Explain 0/1 knapsack using suitable example?
d. What is heap? Write algorithm or heap sort? Give example?
e. Explain Dijkstra's algorithm with example?