Q.22 Write a short note on Travelling Salesman Problem.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain Quick sort with its analyses.

Q.24 Explain Kruskal's algorithm with example.

Q.25 Explain in detail Worst case, Best case and Average case efficiencies with example.

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4th Sem / Artificial Intelligence & Machine Learning

Subject : Algorithm Design Techniques

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following sorting algorithms is the fastest ?

a) Merge sort b) Quick sort

c) Insertion sort d) Shell sort

Q.2 What is the average running time of a bubble sort algorithm?

a) $O(N_2)$ b) O(N)

c) O(N log N) d) O(log N)

Q.3 Which data structure is used in depth first search to stre nodes ?

a) Stack b) Queue

c) Array d) Tree

Q.4 Dijkstra's Algorithm cannot be applied on _____.

a) Directed and weighted graphs

b) Graphs having negative weight function

c) Unweighted graphs

d) Undirected and Unweighted graphs

Q.5 The number of edges from the node to the deepest leaf is called _____of the tree.

a) Height b) Depth

c) Length d) Width

Q.6 What is the time complexity of Dijikstra's algorithm?

a) O(N) b) $O(N_3)$

c) $O(N_2)$ d) O(logN)

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Quick sort follows Divide-and-Conquer strategy. (True/False)

Q.8 Define Ω-notation?

Q.9 Define In order traversal of a tree.

Q.10 Kruskal Algorithm is a Divide and conquer technique. (True/False)

Q.11 A node in binary tree has maximum_____number of children.

Q.12 _____ is the average running time of a Merge sort algorithm

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Define algorithm. How to measure input size of algorithm?

Q.14 Compare Depth First Search with Breadth First Search.

Q.15 Explain any Divide and conquer technique.

Q.16 Analyse binary search with best case.

Q.17 How to analyse non-recursive algorithm?

Q.18 Explain Knapsack Problem.

Q.19 Explain analysis of Selection Sort with example..

Q.20 Explain properties related to binary tree traversal.

Q.21 Trace the Merge sort for data A = {6,5,3,11,10,4,7,9}