SECTION-D

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

Q.23 Explain Prim's algorithm with example.

Q.24 Explain Travelling Salesman Problem.

Q.25 Explain Asymptotic Notations with example.

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 Dijkstra's Algorithm is used to solve_____ problems.

a)   All pair shortest path

b)   Single source shortest path

c)   Network flow

d)   Sorting

Q.2 Which of the following algorithms is NOT a divide & conquer algorithm by nature?

a)   Linear Search　　　b)   Binary search

c)   Merge sort　　　　d)   Quick Sort

Q.3 What is the average running time of a merge sort algorithm?

a) $O(N^2)$　　　　　b) $O(N)$

c) $O(N \log N)$　　　d) $O(\log N)$

Q.4 The given array is arr ={1,2,4,3}. Bubble sort is used to sort the array elements. How many iterations will be done to sort the array.

a) 4   b) 2

c) 1   d) 0

Q.5 Which data structure is used in Breadth First Search to stre nodes?

a) Stack   b) Queue

c) Array   d) Tree

Q.6 What is the average running time of Binary search algorithm?

a) O(1)   b) O(N)

c) O(N2)   d) O(logN)

SECTION-B

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

Q.7 Define Algorithm.

Q.8 Define O-Notation?

Q.9 Define post order traversal of a tree.

Q.10 Define asymptotic notation.

Q.11 Prim's Algorithm is a Divide and conquer technique.(True/False)

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

SECTION-C

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

Q.13 Write an algorithm for insertion sort.

Q.14 Differentiate between Depth First Search and Breadth First Search.

Q.15 How divide and conquer approach work?

Q.16 Analyse binary search with worst case.

Q.17 How to analyse recursive algorithm?

Q.18 Explain analysis of Bubble Sort with example.

Q.19 What do you mean by exhaustive search? Explain with example.

Q.20 How can you measure the input size of an Algorithm?

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

Q.22 Write a short note on Brute force approach.