3RD SEM./ IT/ CSE /2020(W)NEW
Th2- Data Structure

Full Marks: 80   Time- 3 Hrs

Answer any five Questions including Q No.1& 2

Figures in the right hand margin indicates marks

1.   Answer **All** questions   2 x 10
   a.   Name four data structure.
   b.   What is concatenation operation in string? Give one example.
   c.   Define sparse matrix. Give one example.
   d.   What is Garbage collection?
   e.   Define merging operation.
   f.   Define Recursion.
   g.   What is circular queue?
   h.   Convert into Postfix
        (i)   (a+b)/(c-d)
   i.   Write two advantages of linked list.
   j.   What is the significance of Path Matrix?

2.   Answer **Any Six** Questions   6 x 5
   a.   What do you mean by complexity of an Algorithm? Explain space and
        time complexities.
   b.   Define string. Explain different string operations.
   c.   What is multidimensional array? Derive an expression of addressing
        A[I,J] in a two dimensional array by (i)Row_Major and (ii) Column _Major
        order
   d.   Define Stack. Write PUSH and POP algorithm.
   e.   What do you mean by searching? Explain Binary searching with suitable
        example.
   f.   Define Graph. Draw a Graph and write the Adjacency matrix.
   g   How Binary tree is represented in memory? Explain tree traversal.

3   Define Sorting. Write the algorithm for Bubble sorting. Explain with a   10
        suitable example.

4   Define binary search tree. Explain how insertion and deletion operations   10
        takes place in a binary search tree with suitable example.

5   Why Linked list is needed? Write an algorithm for traversing a linked list. 10
        Explain how it is represented in memory

6   Define linear array. Write algorithm to inset and delete element at mth   10
        location of the array.

7   What do you mean by Hashing? Write the different hashing techniques.   10
        Explain collision resolution techniques.