E-3798

B. Sc. (Part-III) EXAMINATION, 2021

INFORMATION TECHNOLOGY

Paper Second

(Fundamental Data Structure)

Time : Three Hours]   [Maximum Marks : 50

Note :-Attempt any two questions from each unit. All questions carry equal marks.

UNIT -1

1. a. What is Queue? Explain circular queue and priority in detail. Give examples.

   b. Define data structure. Explain Algorithm and its analysis in detail.

   c. What is stack? What are the operations that can be performed on stack? Also explain stack as an abstract data type.

UNIT -2

2. a. What is linked list? Is it a linear or non-linear data structure? What are the advantages of linked list has over an Array list?

   b. Explain doubly linked list and its memory representation. Describe algorithm for inserting at the end of the doubly linked list.

   c. Explain circular linked list. Also explain queue as a circular linked list with the help of example.

UNIT -3

3. a. What is B Tree data structure? What are the operations performed on B-Tree.

   b. Explain B+ Tree with the help of diagram and example.

   c. Write notes on :
   i. Linked list representation of binary tree
   ii. Threaded binary tree

UNIT -4

4. a. Explain Binary search tree with the help of example. Write step by step algorithm for binary search tree.

   b. Explain heap sort and quick sort with example.

   c. What is bubble sort? Explain with example. Write algorithm for bubble sort.

UNIT -5

5. a. Define graph. Explain directed, undirected and weighted graphs with examples. Also write advantages and disadvantages of all.

   b. What are the method for traversing a graph? Explain in detail with the help of suitable examples.

   c. Explain spanning tree and minimum spanning tree with the help of example. What are the application areas of both.

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