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## SARDAR PATEL UNIVERSITY

External Examination-2020

B. Sc. – IT( Information Technology) - 5<sup>th</sup> Semester - NC

US05CINT02 – Data and File Structures

26<sup>th</sup> December, 2020 (Saturday)

Time: 2:00 pm to 4:00 pm

Max. Marks – 70

Q-1 Give answers of following multiple choice questions. [10]

- 1) \_\_\_\_\_ is the basic fact or entity that is utilized in calculation.  
a) Data                      b) Fact                      c) Information                      d) All of these
- 2) \_\_\_\_\_ operation finds the presence of data items in the list of data items.  
a) Sorting                      b) Searching                      c) Merging                      d) Updating
- 3) The node which is at the end and which does not have any child is called \_\_\_\_\_.  
a) Branch                      b) Parent                      c) Root                      d) Leaf
- 4) The operation of processing each element in the list is known as \_\_\_\_\_.  
a) Sorting                      b) Merging                      c) Inserting                      d) Traversal
- 5) The process of merging of two ordered tables which can be combined in to single sorted table is called \_\_\_\_\_.  
a) Selection sort                      c) Merge sort  
b) Insertion sort                      d) Bubble sort
- 6) \_\_\_\_\_ technique requires an unordered table to search a particular record in the table.  
a) Binary search                      c) Sequential search  
b) Sorting                      d) None of these
- 7) A \_\_\_\_\_ is a collection of information items about a particular entity.  
a) Record                      b) Database                      c) Entity                      d) None of these
- 8) The collection of files is known as \_\_\_\_\_.  
a) Data file                      b) File                      c) Database                      d) None of these
- 9) \_\_\_\_\_ file is also known as Random file.  
a) Serial                      b) Sequential                      c) Direct                      d) None of these
- 10) \_\_\_\_\_ file is organized into data blocks and index blocks.  
a) Index                      b) SIS                      c) System                      d) Master

Q-2 Fill in the blanks and True – False. [08]

- 1 A stack is \_\_\_\_\_ type of data structure.

[P.T.O.]

- 2 Tree is a \_\_\_\_\_ data structure.
- 3 K-way merging is known as \_\_\_\_\_.
- 4 The number of records in a bucket is called the \_\_\_\_\_.
- 5 Base of an array is the address of memory location where the first element of the array is located. ( True / False)
- 6 The number of sub tree of a node in a tree is called Height of a node. ( True / False)
- 7 Binary search requires an ordered table to search a particular record in the table. ( True / False)
- 8 All types of external storage device support a Direct file organization. ( True / False)

**Q-3 Write down the answer of the following short question. (Any Ten)**

[20]

- 1) Define Data Structure.
- 2) Suppose that each element requires 2 word (byte), the base address of the array a[10] is 550 and lower bound of the array is 0. Find the address of a[5].
- 3) Define queue. List the types of Queues.
- 4) Define singly link list.
- 5) Define root and leaf of a tree.
- 6) List out application of Link list.
- 7) Define sorting. Also list the sorting techniques.
- 8) Define searching. Also list the searching techniques.
- 9) Difference between Searching and sorting.
- 10) Define: File, Database
- 11) Define Transaction. Which types of transactions are performed on the file?
- 12) What do you mean by file organization? Why it is Required?

**Q-4 Give the answers of following questions. (Any 4)**

[32]

- 1 Write the algorithms for Push and Pop operations of a Stack.
- 2 Explain in detail Classification of Data Structure.
- 3 Write Algorithms for insert and delete operations in single link list
- 4 Write algorithms for Inorder and Preorder traversals of binary tree.
- 5 Write down the algorithm of bubble sort.
- 6 Write down the algorithms for Sequential and Binary Search.
- 7 Explain in detail the structure of Sequential File.
- 8 Write a detail note on structure of Direct files.

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