

SEAT No. _____

No. of Printed Pages: 2

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SARDAR PATEL UNIVERSITY
Second Year BCA (SEM – III) Examination
US03BCA03: ADVANCED DATA AND FILE STRUCTURES [NC]
DATE: 4/01/2021, Monday **TIME: 02:00p.m to 04:00p.m**

Total Marks: 70

Note: 1. All the questions are compulsory. 2. Figures to the right indicate marks.
 3. Start a new question from a new page.

Q.1 Multiple Choice Questions

[10]

- a. The number of elements in an array is called the _____ of the array
1. Size 2. Base 3. Type 4. Index
- b. Tree is a _____ data structure.
1. Linear 2. Non-Linear 3. Variable 4. Non-subscript
- c. The nodes which have the same parent are called _____
1. Degree 2. Height 3. Level 4. Siblings
- d. A Digraph is known as _____ graph.
1. Directed Graph 2. Multiple Graph
3. Double Graph 4. Undirected Graph
- e. A vertex whose indegree is 0 is called _____
1. Source node 2. Self Loop
3. Single node 4. Cycle
- f. There are at most _____ passes required to perform a Bubble sort.
1. n-1 2. n 3. n+1 4. n/2
- g. K-way merging is known as _____
1. Simple merge 2. Selection sort
3. Multiple merging 4. Binary merging
- h. Record is also known as group or _____
1. Item 2. Entity 3. Segment 4. None of these
- i. The collection of files is known as _____
1. Data file 2. Database 3. File 4. None of these
- j. _____ file is also known as Random file.
1. Serial 2. Direct 3. Sequential 4. None of these

Q.2 State True/False for the following:

[08]

- a. The number of elements in an array is called the Base of the array.
- b. The node at the end without any child node is called branch.
- c. If a graph does not have any cycle then it is called Acyclic graph.
- d. A directed edge is known as Arc.
- e. The process of merging of two ordered tables which can be combined into a single sorted table is called Merge sort.
- f. Binary search requires an ordered table to search a particular record in the table.
- g. A record item that uniquely identifies a record in a file is called a Key.
- h. The number of records in a bucket is called the table capacity.

Q.3 Short-Answer Questions (Attempt any 10 out of 12)

[20]

- a. Define Array
- b. List 2 applications of an Array
- c. Define Tree with an example
- d. List the types of Binary Tree Traversal
- e. What is mixed Graph
- f. What is a Sink and Source node of a Graph
- g. Define Sorting
- h. Define Searching
- i. List the applications of Searching
- j. Define Record and File
- k. Define File organization and list out the different types
- l. List out various overflow strategies

Q.4 Long Answer Questions (Attempt any 4 out of 8) (Equal weightage)

[32]

- a. Explain the representation of 2-D array in the memory. Also explain its declaration and initialization with example.
- b. Explain the representation of 1-D array in the memory. Also explain its declaration and initialization with example.
- c. Explain the representation of Binary tree.
- d. What is tree traversal? Explain the difference between Pre-order and Post-order traversal with the help of illustration.
- e. Write down the algorithm of Selection sort. Explain with example.
- f. Write down the algorithm of Binary search. Explain with example.
- g. Explain the structure of Index sequential file supported by IBM.
- h. Write a note on structure of Direct files.

