

B.C.A. (Sem-3) Examination

US03CBCA03: Advanced Data and File Structure

Date: 01-11-2018

Time : 2.00 pm – 5.00 pm

Marks: 70

Thursday

Q-1 Select the correct option for the following questions. 10

- (1) Tree is a _____ data structure.
- A. Linear
B. Non-linear
C. Variable
D. Non-subscript
- (2) In row major order, elements of matrix are stored on a _____ basis.
- A. Row by Column
B. Column by Column
C. Column by Row
D. Row by Row
- (3) A binary tree has at most _____ child.
- A. Two
B. Three
C. One
D. None of these
- (4) A node whose outdegree is 0 is called _____.
- A. Source node
B. Self loop
C. Sink node
D. Single node
- (5) In selection sort algorithm, for i th pass of the sort, _____ comparisons are required.
- A. $n+i$
B. $n-i$
C. $n+1$
D. $n-1$
- (6) _____ technique requires an unordered table to search a particular record in the table.
- A. Sequential Search
B. Binary search
C. Sorting
D. None of these
- (7) Record is also known as group or _____.
- A. Item
B. Segment
C. Entity
D. None of these
- (8) A record item that uniquely identifies a record in a file is called a _____.
- A. Key
B. Sequence Key
C. Item
D. None of these
- (9) The collection of files is known as _____.
- A. Data file
B. File
C. Database
D. None of these
- (10) The nodes which have the some parent are called _____.
- A. Degree
B. Leaf
C. Height
D. Siblings

(P.T.O.)

①

②

- Q-2** Do as directed. (ATTEMPT ANY TEN) 20
- (1) Write the formula for address calculation of 1-D array element and explain it.
 - (2) Define root and leaf of a tree with an example.
 - (3) Suppose that each element requires 2 word (byte), the base address of the array a[10] is 250 and lower bound of the array is 0. Find the address of a[4].
 - (4) What is Binary Tree?
 - (5) Define : Directed and Undirected Graph.
 - (6) What is Sink and source node of a Graph?
 - (7) Define selection sort.
 - (8) Define sorting. Also list the sorting techniques.
 - (9) Write down difference between Searching and sorting.
 - (10) Define: File, Database.
 - (11) Define File organization and list out different types of file organization.
 - (12) Define Hashing Function and list out different types of them.

- Q-3** A. Define array. Explain 1-D array with declaration and initialization. 4
 B. Explain address calculation of 2-D array element with example. 6

OR

- Q-3** A. Explain 2-D array with declaration and initialization. 4
 B. Explain Sparse Matrix in detail. 6

- Q-4** Discuss the memory representation of binary tree using sequential and linked representation 10

OR

- Q-4** What is traversal of a tree? Explain Preorder, Inorder and Postorder with an example. 10

- Q-5** A. Write down the algorithm of Bubble Sort. 5
 B. Write down the algorithm of Sequential Search. 5

OR

- Q-5** A. Write down the algorithm of Selection Sort. 5
 B. Write down the algorithm of Binary Search. 5

- Q-6** A. Explain the structure of index sequential file supported by IBM. 5
 B. Write a short note on Single buffering. 5

OR

- Q-6** A. Explain the structure of index sequential file supported by CDC. 5
 B. Write a short note on Multiple buffering. 5

~~_____~~
 (2)