003-003205

B.C.A. (CBCS) Sem.-II Examination
April-2014
CS-07 : Data Structure Using 'C' Language

Faculty Code : 003
Subject Code : 003205

Time : 2½ Hours] **[Total Marks : 70**

1. Multiple Choice Question : (Attempt **all** question) **20**

(1) Which data type holds all qualifiers ?
(a) integer (b) float
(c) double (d) character

(2) Queue is _____.
(a) Primitive data structure (b) Linear data structure
(c) Non-linear data structure (d) None of above

(3) Stack follows _____ method.
(a) LIFO (b) FIFO
(c) Both of above (d) None of above

(4) In tree construction which is the suitable efficient data structure ?
(a) array (b) linked list
(c) stack (d) queue

(5) Each node in linked list contains data element (information) & pointer (address).
(a) True (b) False
(c) Both (a) and (b) (d) None

(6) In which linked list there are no NULL values ?
(a) Singly Linked List (b) Doubly Linked List
(c) Circular Linked List (d) None of above

(7) The operations for adding an entry to a stack is traditionally called _____.
(a) add() (b) append()
(c) insert() (d) push()

(8) New nodes are added to the _____ of queue.
(a) Front (b) Back (rear)
(c) Middle (d) Both (a) & (b)

(9) In array queue, data is stored in an _____ element.
(a) node (b) linked list
(c) array (d) constructor

(10) Which of the following data structures are indexed structures ?
(a) Linear arrays (b) Linked lists
(c) Both of above (d) None of above

(11) Which sorting technique is also known as Bin sort ?
(a) Merge (b) Quick
(c) Bucket (d) Shell

(12) Bubble sort is also known as _____.
(a) Comparison (b) Compare
(c) Compress (d) Content

(13) Which of the following is the proper keyword to allocate memory in C ?
(a) new (b) malloc
(c) create (d) value

(14) Which of the following is proper declaration of pointer ?
(a) int x; (b) int &x;
(c) int *x; (d) ptr *x;

(15) Which operator use for access pointer to structure ?
(a) . (dot) (b) → (arrow)
(c) * (asterisk) (d) ; (semicolon)

(16) Which is the powerful tool of C ?
(a) Array (b) Pointer
(c) Structure (d) Union

(17) What is optional in prototype declaration ?
(a) Function name (b) Variable name
(c) Data type (d) Semi-colon

(18) Which sorting technique is very faster ?
(a) Selection (b) Bubble
(c) Insertion (d) Quick

(19) An empty tree is also a _____ tree.

(a) AVL (b) Binary

(c) Red black (d) All of above

(20) Which of the following is not a characteristic of algorithm ?

(a) Input (b) Output

(c) Termination (d) None of above

2. Attempt the following : **6**

(A) Attempt any **three** :

(1) List out all the Data types with size.

(2) Explain multi-dimensional array with example.

(3) Explain advantage of Pointer.

(4) What is linked list ?

(5) Explain In-order, Preorder, Post order traversal in tree.

(6) Write a Algorithm for selection sort.

(B) Attempt any **three** : **9**

(1) Difference between malloc() and calloc() function.

(2) Explain Register Storage Class.

(3) What is structure ? Explain in brief.

(4) What is sorting ? List out types of sorting.

(5) Difference between Stack and Queue.

(6) Implement static stack with following operation.

(a) Push() (b) Pop()

(c) Update() (d) Peep()

(C) Attempt any **two** : **10**

(1) Explain Bubble sorting technique with example.

(2) Explain Index searching with example.

(3) List out Non-primitive Data Structure and explain Non-linear Data Structure.

(4) Implement circular Doubly linked list with following operations.

(a) Create()

(b) Display()

(c) Count()

(d) Search

(e) Sort()

(5) Implement Merge sort.

3. Attempt the following :

(A) Attempt any **three** : **6**

(1) Explain asymptoic notation in brief.

(2) Explain shortest path problem.

(3) Explain Enum with example.

(4) Explain Time and Space complexities for algorithm.

(5) Explain Shell sorting.

(6) Explain Union.

(B) Attempt any **three** : **9**

(1) Explain B-Tree in detail.

(2) Write a short note on Minimal Spanning Tree.

(3) Explain Big-oh notation.

(4) Write a algorithm for following operation in singly linked list.

(a) Create()

(b) Display()

(c) Count()

(d) Search()

(5) Explain classes of Algorithms.

(6) Write Algorithms for Insertion sorting.

(C) Attempt any **two** : **10**

(1) Write a note on Scope Rules and Storage Class.

(2) Implement circular queue with following operation :

(a) Insert()

(b) Update()

(c) Delete()

(3) Explain DFS in detail.

(4) Write a program that merge two linked list.

(5) Implement Quick sorting.