AI-50

003-003205

B.C.A. (CBCS) (Sem.-II) Examination
April-2013
CS-07 Data Structure using 'C' Language (New)

Faculty Code : 003
Subject Code : 003205

Time : 2 ½ Hours] **[Total Marks : 70**

Instructions : (1) There are **20** MCQs of **one** mark each.
(2) Figures to the right indicate marks.
(3) Attempt **all** questions.

1. MCQ : **20**

(1) The estimate complexity of function and analysis which of the following can be used ?
(a) Big-Oh Notation (b) Big Omega Notation
(c) Big Theta Notation (d) All of above

(2) Time complexity depends on _____ of programs input.
(a) Height (b) Width
(c) Type (d) Size

(3) In O Notation the expression O is called _____ symbols.
(a) Linkon's (b) Linkedin's
(c) London's (d) Landay's

(4) Array is _____ type of data structure.
(a) Linear (b) Homogeneous
(c) Non-Homogeneous (d) Both (a) & (b)

(5) An array is actually a pointer of _____ element of the array.
(a) Last (b) 1^{st}
(c) 2^{nd} (d) 0^{th}

(6) C Prog. Language managers memory _____.
(a) Statically (b) Dynamically
(c) Automatically (d) All of given

(7) Which of the following function belongs to stdlib. h header file ?
(a) Malloc (b) Calloc
(c) Free (d) alloc

(8) _____ Sorting method is also known as bin sort.
(a) Bubble (b) Merge
(c) Bucket (d) Quick

(9) Which of the following sorting method uses divided and conquer technique ?
(a) Merge (b) Bubble
(c) Quick (d) Bucket

(10) Which of the following is a way to reverse a linked list.
(a) Interactive way (b) Recessive way
(c) Both (a) & (b) (d) None

(11) _____ follows hierarchieal orders.
(a) Linked list (b) Tree
(c) Stack (d) Queue

(12) If top = –1 then the stack is _____.
(a) full (b) empty
(c) static (d) dynamic

(13) To improve performance priority queue uses a _____ as backbone.
(a) Stack (b) Heap
(c) Bucket (d) Queue

(14) Incidence matrix is a _____ dimensional Boolean matrix.
(a) one (b) two
(c) three (d) multi

(15) A doubly linked list can traverse in _____ direction.
(a) one (b) two
(c) three (d) four

(16) Information is _____ type of representation.
(a) Symbolic (b) Literature
(c) Arithmetic (d) Logical

(17) Node without children called _____.

(a) Leaf Node (b) Root Node

(c) Branch (d) Inner Node

(18) How many fundamental types of binary tree traversal is possible ?

(a) Two (b) Three

(c) Four (d) Zero

(19) Each mode in simple linked list contains _____ fields.

(a) 2 (b) 3

(c) 4 (d) 5

(20) _____ is an algorithm for traversing finite graph.

(a) DFS (b) DFD

(c) BFS (d) BFD

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

(1) Explain enum with example.

(2) Explain malloc ( ) with example.

(3) Explain union.

(4) Define relation between pointer and array.

(5) Write insertion sort algorithm.

(6) Write linear search algorithm.

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

(1) Explain 20 array with example.

(2) Explain static and register storage class with example.

(3) What is data structure ? Explain primitive data structure.

(4) Write a program that sort the values of the array using Bubble sort.

(5) Write algorithm for push and pop operation for stack.

(6) Explain applications of queue.

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

(1) Write a program for all operations of queue using array.

(2) Explain Bucket sort algorithm.

(3) Write short note on pointer and array of pointer.

(4) Explain circular queue with example.

(5) Explain types and classes of algorithms.

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

(1) Write an algorithm that delete last node in doubly linked list.

(2) Explain properties of tree.

(3) Define Root Node, Leaf Node.

(4) Write advantages and disadvantages of adjacency list.

(5) List out graph traversal methods.

(6) Write an algorithm that traversing a binary tree in inorder.

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

(1) Write a programe that create and display circular linked list.

(2) Write short note on B-tree.

(3) Explain binary search tree.

(4) Explain shortest path problem.

(5) Explain height balanced tree.

(6) Explain Big-Oh notation.

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

(1) Write a program that merge two liked list.

(2) Create a binary tree for the following 20, 10, 5, 8, 25, 40, 30, 21, 26, 9, 7, 8. Also write the inorder, preorder and postorder of the tree.

(3) Explain DFS in detail.

(4) Explain evaluation of expression using stack (Postfix, Prefix).

(5) Write a program that perform following operation for singly linked list.

(1) create

(2) display

(3) insert first

(4) delete last

(5) sort