DS-003-003205 Seat No. 20764

B.C.A. (Sem. II) (CBCS) Examination

April / May – 2015

CS-07 : Data Structure Using 'C' Language

(New Course)

Faculty Code : 003

Subject Code : 003205

Time : $2\frac{1}{2}$ Hours] [Total Marks : 70

Q. 1 Multiple choice question.(Attempt all question) **[20]**

1. **Stack follows _____method**
   (A) LIFO
   (B) FIFO
   (C) Both of above
   (D) None of above

2. **The time factor when determining the efficiency of algorithms is measured by**
   (A) Counting microseconds
   (B) Counting the number of operations
   (C) Counting the number of key operations
   (D) Counting the kilobytes of an operation

3. **The operations for adding an entry to a stack is traditionally called**
   (A) add()
   (B) append()
   (C) Insert ()
   (D) Push()

4. **Each mode in simple linked list contains**
   (A) 2
   (B) 3
   (C) 4
   (D) 5

5. **_____ is an algorithm for traversing finite graph.**
   (A) DFS
   (B) DFD
   (C) BFS
   (D) BFD

6. Node without children called.
   (A) Leaf Node
   (B) Root Node
   (C) Branch
   (D) Inner Node

7. How many fundamental types of binary tree traversal possible?.
   (A) Two
   (B) Three
   (C) Four
   (D) Zero

8. _____ sorting method is also known as bin sort.
   (A) Bubble
   (B) Merge
   (C) Bucket
   (D) Quick

9. Which of the following function belongs to stdlib.h header file?
   (A) Malloc
   (B) Calloc
   (C) Free
   (D) Alloc

10. Which of the following is proper declaration of pointer?
   (A) int x;
   (B) int &x;
   (C) int *x;
   (D) ptr *x;

11. Which operator use for access pointer to structure?
   (A) .(dot)
   (B) ->(arrow)
   (C) *(asterisk)
   (D) ;(semicolon)

12. If top =-1 then the stack is ____
   (A) Full
   (B) Empty
   (C) static
   (D) dynamic

13. 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

14. **Information is ____ type of represent action.**
   (A) Symbolic
   (B) Literature
   (C) Arithmetic
   (D) Four

15. **Which sorting technique is very faster?**
   (A) Selection
   (B) Bubble
   (C) Insertion
   (D) Quick

16. **Which of the following data structure store the non-homogeneous data element?**
   (A) Arrays
   (B) Records
   (C) Pointers
   (D) None

17. **In O notation the expression O is called _____ smbols.**
   (A) Linkon's
   (B) Linkedlin's
   (C) London's
   (D) landy's

18. **If an edge is identical end points, it is called a _____**
   (A) Degree
   (B) Vertex
   (C) Loop
   (D) Path

19. **Which is powerful tool of C?**
   (A) Array
   (B) Pointer
   (C) Structure
   (D) Union

20. **The _____ of a node is the number of edges containing that node**
   (A) Path
   (B) Degree
   (C) Vertex
   (D) Loop

2. Attempt the following:

(A) Attempt any Three **[06]**

1. Explain properties of tree.
2. Define Root Node, Leaf Node
3. Write advantage and disadvantage of adjacency list.
4. List out graph traversal methods.
5. Explain Time and space Complexities for algorithm.
6. Explain shell sort algorithm with example.

(B) Attempt any Three **[09]**

1. Explain Bubble Sorting technique with example.
2. Explain Static and Register Class with example.
3. Stack V/s Queue
4. Explain multi-dimension array with example.
5. What is structure? Explain in brief.
6. Write a algorithm step of quick sort.

(C) Attempt any Two **[10]**

1. Write a program for all operation of queue using Array.
2. Explain circular queue with example.
3. Explain bucket sort algorithm with example.
4. Explain Primitive and Non-primitive data structure types.
5. Write a linear search algorithm

3. Attempt the following:

(A) Attempt any Three **[06]**

1. Define relation between pointer and Array.
2. Explain enum with example.
3. Explain advantage of pointer?
4. Explain union?
5. Explain malloc () and calloc () function with example.
6. What is linked list?

(B) Attempt any Three **[09]**

1. Explain shortest path problem.
2. Explain binary search tree.
3. Explain big-Oh notation.
4. Write a height balance tree.
5. Write a short note on B-Tree.
6. Write a short note on minimal Spanning Tree.

(C) Attempt any Two: **[10]**

1. Explain DFS in details
2. Explain evaluation of expression using stack(Postfix and Prefix)
3. Explain big-Oh notation.
4. Write a program that performs following operation for singly linked list.
   (1) Create (2) Display (3) Insert First (4) Delete Last (5) Sort
5. Create a binary tree for the following 10, 12, 5, 8, 25,13, 30, 22, 26,9, 7, 8 also write the in-order, pre-order and post-order.