BACHELOR OF COMPUTER APPLICATION
Second Semester
Data Structure Through C
(BCA- 07)

Duration: 3Hrs.   Full Marks: 70

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.   Marks: 50

I. Answer the following questions (any five)   2×5=10

1) What is space and time complexity?
2) List two applications of binary tree.
3) Define Max heap and min Heap.
4) What is weighted graph? Give example.
5) List two merits of doubly linklist over singly linklist.
6) Why height balanced tree are used?
7) Define priority queue.

II. Answer the following questions (any five)   3×5=15

What is minimum spanning tree? Write name of two algorithms for finding minimum spanning tree.
2. Explain with example how to store directed graph using adjacency list.
3. What is abstract data type? Give example.
4. What is B-Tree. Explain with example.
5. Differentiate between External and Internal sorting.
6. List the merits of pointer over array.
7. Define recursion. What are the demerits of recursion?

PTO.....

III. Answer the following questions (any five)   5×5=25

1. What is linked list? Mention type of linked lists with diagrams and explanations.
2. What is an array? Differentiate between an array and ordinary variable. How to initialize an array?
3. Write a function to perform binary search.
4. Write an algorithm to perform Insertion sort.
5. Explain DFS algorithm with a suitable example.
6. Define stack. Write various terms related to stack.
7. What is Inorder, preoder, postorder traversal?

****

BACHELOR OF COMPUTER APPLICATION

Second Semester

Data Structure Through C

(BCA - 07)

(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes

Marks – 20

PART A- Objective Type

A. Choose the correct option for the following questions: 1x20=20

1. Which of the following data structure is used for recursion
    a) Queue   b) Stack   c) Circular queue   d) None of these

2. The searching technique that take o(1) time ti find a data is
    a) Linear search   b)Binary search   c)Hashing   d)Tree search

3. The Complexity of bubblesort is
    a)$O(n^2)$ b)O (nlogn)   c)$O(n)$ d)none of these

4. Breadth First Search uses
    a) Stack   b) Queue   c) Priority queue   d) None of these

5. Order(N) is better than O(1) time
    a) True   b)False

6. Binary search cannot be performed using
    a) Array   b)Linklist   c)Both I and ii   d)All of these

7. The best average behaviour is shown by
    a)Quicksort   b)Merge sort   c)Heapsort   d)Insertion sort

8. What is the postfix form of following prefix expression *+ab-cd
    a)ab+cd*   b)abc+*-   c)ab+*cd-   d) none of these

9. Aqueue is
    a) FIFO   b) LIFO   c) Ordered Array   d) Linear tree

10. How many nodes are there in a full binary tree of depth 3
    a)2^{d+1}-1   b)2d-1   c)2d+1   d)None of these

11. The data structure used to evaluate postfix expression is
    a)Stack   b)Queue   c)Circular queue   d)none of these

12. Which of the following data structure is non-linear type?
    a)Strings   b)Lists   c)Stacks   d)None of these

13. The expression X=4+2%-8 evaluate
    a)-6   b)6   c)4   d)None of these

14. What is the most appropriate data structure to implement a priority queue?
    a)Heap   b)Circular array   c)Link list   d)Binary tree

15. Linear search can be performed on
    a)sorted array   b)unsorted array   c)any array   d)all of these

16. Complexity of insertion operation on a linear queue is
    a)O(1)   b)O(n)   c)$O(n^2)$ d)None of these

17. Kruskal algorithm is used to find
    a) Longest path   b) Shortest path   c) Minimum spanning tree   d) None of these

18. A mathematical model with a collection of operations defined on that model is called
    a) Data structure   b)Abstact datatype   c)Primitive datatype   d)Algorithm

19. The smallest element of an array index is called its
    a)Lower bound   b)Upper bound   c)Range   d)Extraction

20. B tree are generally
    a) Very deep and narrow   b) Very wide and shallow   c)Very deep and very wide   d)Cannot say

****