B.C.A. DEGREE EXAMINATION,APRIL 2020
II Year III Semester
Data Structures and Algorithms

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. What is meant by asymptotic notations?
2. Define ordered list.
3. List the various applications of Queue.
4. State the basic operations performed in stack.
5. How do you represent the polynomial through linked list?
6. Define graphs.
7. State any two difference between trees and binary trees.
8. What do you mean by divide and conquer technique?
9. Define algorithm. List out the characteristics of an algorithms.
10. How does linked list differ from array?
11. What is meant by recursion?
12. Construct a binary tree for the following expression: A-(B+C)/D.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. What are primary data type? How do they differ from composite data type?
14. Elucidate about the doubly linked list.
15. Write an algorithm to convert the given infix expression A/B^C+D*E into the postfix form.
16. Write the Algorithm for Binary Search techniques.
17. Discuss the hash tables and hash functions.
18. Write an algorithm to implement stack using array.
19. Write Dijkstra's algorithm to determine the shortest path.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Define array. Elucidate various operations performed in array with an example.
21. Write an algorithm LENGTH(P) to count the number of nodes in singly linked list, where P points to the first node in the list and last node has link field O.
22. Write algorithms to insert and delete elements in a circular queue.
23. Explain various binary tree traversal techniques with example.
24. Write an algorithm for merge sort by applying divide and conquer strategy.

B.C.A. DEGREE EXAMINATION,APRIL 2020
II Year III Semester
Data Structures and Algorithms

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. What is meant by asymptotic notations?
2. Define ordered list.
3. List the various applications of Queue.
4. State the basic operations performed in stack.
5. How do you represent the polynomial through linked list?
6. Define graphs.
7. State any two difference between trees and binary trees.
8. What do you mean by divide and conquer technique?
9. Define algorithm. List out the characteristics of an algorithms.
10. How does linked list differ from array?
11. What is meant by recursion?
12. Construct a binary tree for the following expression: A-(B+C)/D.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. What are primary data type? How do they differ from composite data type?
14. Elucidate about the doubly linked list.
15. Write an algorithm to convert the given infix expression A/B^C+D*E into the postfix form.
16. Write the Algorithm for Binary Search techniques.
17. Discuss the hash tables and hash functions.
18. Write an algorithm to implement stack using array.
19. Write Dijkstra's algorithm to determine the shortest path.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Define array. Elucidate various operations performed in array with an example.
21. Write an algorithm LENGTH(P) to count the number of nodes in singly linked list, where P points to the first node in the list and last node has link field O.
22. Write algorithms to insert and delete elements in a circular queue.
23. Explain various binary tree traversal techniques with example.
24. Write an algorithm for merge sort by applying divide and conquer strategy.