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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27** |
| **B.C.A - II SEMESTER** |
| **SEMESTER EXAMINATION: APRIL 2019** |
| **CA 2118-DATA STRUCTURES USING C** |
|  |  |  |  |  |  |  |
| **Time- 2 1/2 hrs** |  | **Max Marks-70** |  |

**PART A**

**Answer ALL the questions: 10\*2=20 Marks**

1. Define Data Structures. Mention the types.
2. Define Upper and Lower bound.
3. Mention any two applications of stacks.
4. What are the advantages of circular queues over linearqueues?
5. Explain Dynamic allocation of memory space.
6. Mention any two advantages of link lists over arrays.
7. Give the complexity analysis of selection sorting.
8. What is Binary search? Mention the advantages and disadvantages.
9. What do you mean by Blocking Factor?
10. Define Complete Binary tree with an example.

**PART B**

**Answer any FIVE of the following: 5\*6=30 Marks**

1. Explain the operations on Non-Primitive data structures.
2. Explain the **ENQUEUE** operation on Circular queues.
3. Convert the following infix expression to postfix expression.

**A+B\*(C-D)/E +F**

1. Write the PUSH and POP algorithm for stacks.
2. Write an algorithm to add a node at a specified position in a linked list.
3. Write an algorithm for insertion sort.
4. Define
5. Sub tree
6. Leaf node
7. Siblings
8. Degree
9. Height
10. Root node

**PART C**

**Answer any TWO of the following 2\*10=20 Marks**

1. Write an algorithm to create a link list and delete a node from the beginning of the link list.
2. Explain quick sort in detail with following elements as example

 51, 23, 56, 8, 96, 78, 2

1. Find the in-order, pre-order and post-order traversal of the above

 given binary tree**. 3 Marks**



1. Draw a binary tree given

 In-order ->D B E A F C G

 Pre-order -> A B D E C F G **3 Marks**

1. Write the algorithm to draw a binary tree given the In-order and

Post-order form. **4 Marks**

CA -2118-B-19