



PRESIDENCY UNIVERSITY, BENGALURU  
SCHOOL OF ENGINEERING

Max Marks: 30

Max Time: 55 Mins

Weightage: 15 %

Set A

TEST 3

II Semester 2016-2017

Course: COE A 202 Data Structures using C

17 April 2017

Part A

(4 Q x 2 M= 8 Marks)

1. Define tree data structure with example
2. Apply post-order traversal on the given tree (Fig.01) and write the result
3. Differentiate strictly binary tree and perfect binary tree with example
4. Identify the following terminologies from given tree (Fig.01)

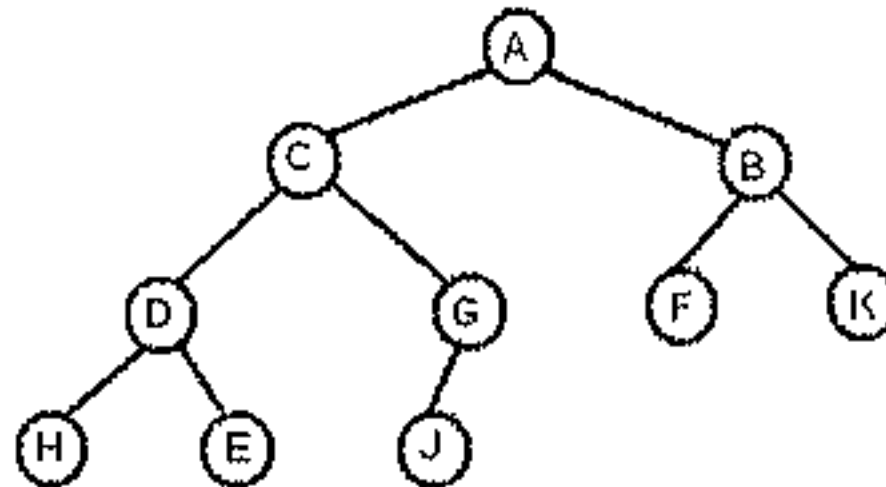


Fig.01

- (a) Leaf nodes (b) Level of the tree (c) Path to the node J (d) Degree of the tree

Part B

(2 Q x 6M= 12 Marks)

5. Construct a binary tree from the following in-order and pre-order traversal

In-order : 6 1 8 5 2 4 7 3      Pre-order : 5 1 6 8 4 2 3 7

6. Discuss the structure of a binary tree node and show the steps involved in constructing a tree for the given expression  $((A + B) * C) - ((D / F) * K)$

Part C

(1Q x 10 M= 10 Marks)

7. Complete the given function to insert elements into BST and show the steps involved in inserting the following values

45, 20, 35, 15, 2, 21, 11, 57, 6, 24, 50

struct node\* insert(struct node\* node, int key)



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TEST 2

II Semester 2015-2017

Course: COE A 202 Data Structures using C

20 March 2017

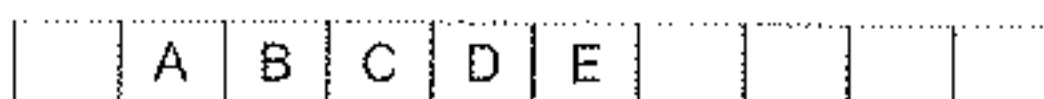
Part A

(4 Q x 2 M= 8 Marks)

1. Give the linked list representation of the following polynomial

$$7x^3y^2 + 8x^2y + 3xy + 11x + 4$$

2. Discuss the limitation of array implementation of stack, how it can be resolved using linked list  
3. Differentiate singly linked list and doubly linked list  
4. Consider the queue given below which has FRONT = 1 and REAR = 5.



Now perform the following operations on the queue:

- (a) Add F (b) Delete two letters (c) Add G (d) Add H

Part B

(2 Q x 6M= 12 Marks)

5. Consider the linear queue with MAXIMUM size as 10

54	9	7	18	14	36	45	21	99	72
0	1	2	3	4	5	6	7	8	9

With front=0 and rear=9

if you want to insert another value, it will not be possible because the queue is completely full(rear= MAX-1). Now Consider a scenario in which two successive deletions are made.

		7	18	14	36	45	21	99	72
0	1	2	3	4	5	6	7	8	9

Even though there is space available, the overflow condition exists because the condition rear = MAX -1 still holds true. Propose a method to insert a new element in the queue shown in above figure

6. Describe the structure of a node and complete the following function which finds the sum of elements of singly linked list, where the first node is referred as HEAD and N is the number of elements.

void sum (struct node \*HEAD, int N)

Part C

(1Q x 10 M= 10 Marks)

7. Write a complete C program to implement the following QUEUE operation with array and proper message for UNDERFLOW and OVERFLOW situations

- Insert items into queue
- Display elements of queue
- Remove items from queue



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Set A

TEST 1

II Semester 2015-2016

Course: COE A 202 Data Structure

20 February 2017

Part A

(4 Q x 2 M= 8 Marks)

1. Differentiate linear and non-linear data structures
2. How do you reference all the elements of an array
3. Differentiate NULL and VOID
4. Explain LIFO principle with example

Part B

(3 Q x 5 M= 15 Marks)

5. Write the postfix form of the given infix expression by strictly following the algorithm  
 $A * (B + D) / E - F * (G + H ^ K)$
6. Write a C program having a function to compute the total price of computer by accepting the address of following structure

```
struct computer
{
    int no_comp;
    float price;
};
```

7. Consider the following code fragment:

```
void generate (int f)
{
    if(f != 0)
    {
        generate(f/2);
        printf("%d", f%2);
    }
}
int main (void)
{
    generate(11);
    printf("\n");
    return 0;
}
```

- a). What is the output generated by the above code?
- b). Which data structure has been used in the generate function call? Justify the answer by tracing the function call.

Part C

(1Q x 7 M= 7 Marks)

8. Demonstrate how stack can be used to solve the following problem, complete the following function `int charent (void )` which reads a string and returns the occurrence of the LAST character in the string. ( Note: exclude NULL character )