B.E.(with Credits)-Regular-Semester 2012-Electrical Engineering & (E. & P.) Sem III

EP 303 - C & Data Structures

P. Pages : 2 **GUG/W/16/3715**

Time : Three Hours * 3 6 0 2 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Illustrate your answers wherever necessary with the help of neat sketches.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.

1. a) Define: **8**

i) Variables.

ii) Constants

iii) Datatype

iv) Header files.

b) Write a program to solve the following equation in C: **8**

$E = (a + b)^2 + 3ab$

OR

2. Write a switch – case program to perform the following operations: **16**

Case 1 : Addition

Case 2 : Subtraction

Case 3 : Multiplication

Case 4 : Division

Case 5 : Mod

Case 6 : Exit

Case 7 : default

3. a) Sort the following list using quick sort: **8**

{33, 48, 15, 20, 12, 56, 49, 73, 69, 98}.

b) Describe Merge sort with example. **8**

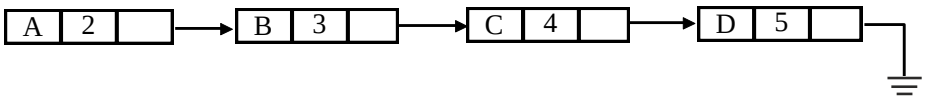
OR

4. a) Write a program for linear search in an array of n elements. **8**

b) Describe Binary search. Give suitable example. **8**

5. a) Describe doubly linked list. Write a function to Traverse in a doubly linked list. **8**

b) Write a c program to create the following list: **8**



OR

6. a) Write a program to create the following structure : **8**

Library :	Book – id	----------	Character
	Book – name	----------	Character
	Author	----------	Character
	Price	----------	Number

b) Write a short note on circular linked list. **8**

7. a) Draw an expression tree for the following expression. Also write prefix and postfix expressions. **8**

$$A-(2*(b-c)-d*e)*f)$$

b) Write applications of stacks and queues. **8**

OR

8. a) Describe queues. Write function to create queue. **8**

b) Write a function to count number of elements in queue. **8**

9. a) Define Tree. Write preorder, postorder and inorder function for the tree. **8**

b) What is a Binary search tree? Give example. **8**

OR

10. a) What are different applications of stacks and Queues? **8**

b) Describe DFS traversal for the graph. Write algorithm and give example. **8**

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