Code: 13A12101

R13

B.Tech I Year (R13) Regular Examinations June/July 2014
**PROGRAMMING IN C & DATA STRUCTURES**
(Common to CE, ME, EEE, ECE, EIE, IT, AE, MCTE & Ch.E)

Time: 3 hours

Max. Marks: 70

Part – A
(Compulsory Question)
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1      Answer the following: (10 X 02 = 20 Marks)
- (a) What is system software? Give examples.
- (b) Define algorithm and given an example.
- (c) What is the output of the following program

```
#include < stdio. h >
void main( )
 {
    int a = 20;
    char ch = '9';
    char st = 'ab';
   float f = 20.23;
   printf("\na = %d", &a);
   printf("\nch=%d\tch=%d", ch, &ch);
  printf("st = %c", st);
  printf("f = %d", f);
 }
```

- (d) Briefly describe the iterative statements.
- (e) How do you declare and initialize a multidimensional array? Give an example.
- (f) Mention the purpose of the functions strset() and strcpy().
- (g) What is a file? What is the use of '$r$' and 'w' in file-type specification?
- (h) Which is the best method among parameter passing methods? Why?
- (i) List the major advantages of data structures.
- (j) What is the in-order and post-order traversals of the following tree:
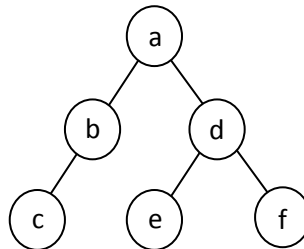


Part – B
(Answer all five units, 05 X 10 = 50 Marks)

UNIT- I

2    (a) What are the different types of programming languages? Explain their features.
      (b) Define hardware. Explain the purpose of various hardware parts of a computer.
                        OR
3    (a) List and define the questions that are raised while sorting the data structures.
      (b) Write the algorithm to check whether a given number is prime or not.

UNIT - II

4    (a) What is an error? Give a brief note on the run time errors.
      (b) Write a C program to find the factorial of a number using recursive functions.
                        OR
5    Explain various branching statements in C with examples

## UNIT - III

6  (a)  How to pass array elements as arguments to function? Explain with one example.
   (b)  Write a C program to read names, marks of a class and calculate the total marks, average and percentage.

OR

7       What is meant by sorting? Write the algorithm for selection sort and illustrate with an example.

## UNIT - IV

8  (a)  Define pointer. How to pass a pointer to a function? Explain.
   (b)  List the advantages of dynamic memory allocation over static memory allocation. Explain the functions, used for dynamic allocation of memory with their syntax.

OR

9  (a)  How do you define structure within a structure? Explain with an example.
   (b)  Give the differences between structure and union.
   (c)  Briefly explain bit fields concept.

## UNIT - V

10 (a)  Explain the operations performed on a circular queue.
   (b)  With an example explain how an infix expression is converted to a postfix expression.

OR

11 (a)  What is a singly linked list? How do represent the linked list?
   (b)  Discuss operations performed on a linked list with suitable examples.

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