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.

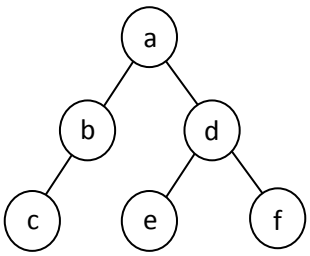
(f) Mention the purpose of the functions strset() and strcpy().

(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

Contd. in page 2

Code: 13A12101 R13

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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