

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)

1 Answer the following: (10 X 02 = 20 Marks)

- (a) What is system software? Give examples.
- (b) Define algorithm and give 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);
```

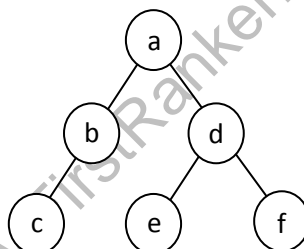
```
    printf("\nch=%d\tch=%d", ch, &ch);
```

```
    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 strstr() 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

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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.
