Students Id: | | | | | | | | |

Total Number of Pages: 2

B.TECH
CS 101

FIRST Semester Examination – 2014

PROGRAMMING IN C

BRANCH: ALL

Time: 3 Hours

Max marks: 50

Answer **atleast one** question from each module and total **five** questions.

The figures in the right hand margin indicate marks.

Module I

1. (a) Write an algorithm or draw a flowchart to check a given positive integer (>1) is a prime number or not. [5]

(b) A company decides to give bonus to all its employees on Christmas. A 5% bonus on salary is given to the male workers and 10% bonus on salary to the female workers. If the salary of the employee is less than Rs. 10,000 then the employee gets an extra 2% bonus on salary. Write a complete C program to enter the salary and sex of the employee. Calculate the bonus that has to be given to the employees and display the salary that the employee will get. [5]

2. (a) Write a complete C program to calculate the sum of $1\times2 + 2\times3 + 3\times4 + \ldots + (N-1)\times N$. User will provide the value of N. [5]

(b) Write a complete C program to generate the following number pyramid for N number of rows. User will provide the value of N. [5]

```
        1
    1   2   1
1   2   3   1   2
.....................
```

3. (a) Write a complete C program to solve a quadratic equation using switch statement. [5]

(b) In January, you buy a new car from a dealer who offers you the following maintenance contract:

a. Rs. 400/- each month other than March, June, September, and December.
b. Rs. 600/- every March, June, and September.
c. Rs. 1000/- every December.

Now, write a complete C program to do the following:

- Take the total number of months as an input from the user. The month cycle starts from January and ends in December. If user gives the total no. of months greater than 12 then the month cycle will again start from January.
- Find out the total cost of maintenance without using any loop. [5]

Module II

4. **(a)** Consider a two-dimensional array stores mark of 5 students in 3 subjects. Now, write a complete C program to display the highest marks in each subject. [5]

(b) Write a complete C program to append a string at the end of another string. User will provide both the strings. Do not use any standard string library functions. [5]

5. **(a)** Write a complete C program to search a given word from a set of words stored in a two dimensional character array. Allow multiple entries for a same word in the given set. [5]

(b) What is the main difference between function pointer and pointer to a function? Explain with examples. [5]

6. **(a)** Write a C function subprogram to return factorials of two positive integers simultaneously called by a main function. [5]

(b) Write a C recursive function to reverse an N-digit number. As an example if the input is 243, then the output will be 342. [5]

Module III

7. Define a structure for representing a point in two-dimensional Cartesian co-ordinate system. Now, write C functions for performing the following tasks: [5+5]

   (a) Compute the middle point of the line segment joining to given points.
   (b) Compute the area of a triangle, given the co-ordinates of its three vertices.

8. **(a)** Write a complete C program using command line argument that reads the content of a file and copy to another file. [5]

(b) Write a C program to read a sequence of positive integers (data stream) from a file. It prints the count (frequency) of different odd digits present in the data stream. The number of integers in the data stream is not known prior to the user. [5]