

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)

**Department of Computer Science and Engineering (CSE)**

MID SEMESTER EXAMINATION  
DURATION: 1 Hour 30 Minutes

WINTER SEMESTER, 2015-2016

FULL MARKS: 75

**CSE 4175: Computer Programming**

Programmable calculators are not allowed. Do not write anything on the question paper.

There are 4 (four) questions. Answer any 3 (three) of them.

Figures in the right margin indicate marks.

- a) Discuss how different types of variables can be taken as input from keyboard in C programming. 5
- b) What is the purpose of #include statement, and why do we need such statement? Take characters as input from the users until the user presses the Enter. Then print the characters count in a new line. 3+7
- c) Write a program that takes an integer  $n$  as input and prints the value  $3n+1$  as output. After the value is shown, the program asks the users if they want to continue. Based on the choice of the users, the program again ask for the value of  $n$  or terminates. 10
- a) Take an integer as input and print the digits in reverse order. For example, if the user inserts 123, your program should print 321. 15
- b) Demonstrate how do the following functions work: 5x2
  - i. strcpy
  - ii. strlen
  - iii. strcat
  - iv. strcmp
  - v. gets
- a) What are the different types of loops in C programming? 3
- b) What is the output of the following program? 10

```
int main(){
    int i = 0, lim=5, j=0;
    for (i = 0; i < lim; i++){
        for (j = i; j >= 0; j--){printf("*");}
        for (j = lim - i - 1; j > 0; j--){printf("-");}
        for (j = 0; j < lim - i - 1; j++){printf("-");}
        for (j = i; j >= 0; j--){printf("*");}
        printf("\n");
    }
    return 0;
}
```

Figure 1: Code for question 3.(a)

- c) Write a program that takes two integers and a character from the users as input. Based on the character a specific function is called with the two integers as arguments. The functions are Add, Subtract, Divide and Multiply. The functions perform operations on the passed parameters as their names suggest. The result is returned to the calling function. A different function is called to print the result.
- a) Take a string from the user. Add 3 with each of the characters in the string. Then print the string in reverse order.
- b) Write a program that takes two integers from the user as input. The first number is the number of rows (r) and the second number is the number of columns (c) of a matrix. Now ask the user to insert the elements of a matrix. Then print the Matrix. One example is given below:

```
Number of rows: 2
Number of columns: 2

Enter value for Pos [1,1]: 3
Enter value for Pos [1,2]: 2
Enter value for Pos [2,1]: 6
Enter value for Pos [2,2]: 5

The Matrix is:
3 2
6 5
```

Figure 2: Output for question 4.(b)