# DOON UNIVERSITY, DEHRADUN

## End Semester Examination, 2016-17
### School of Physical Sciences

Integrated M.Sc. (Semester I)
Course: CSG – 101 Programming in C

*Time Allowed: 3Hours*                                   *Maximum Marks: 30*

## SECTION A

**Attempt any 6 of the following**                          (6×1=6 Marks)

1. What is a pointer? Explain with the declaration of a pointer.
2. What is the base address of an array?
3. Define the term string.
4. How can a *user-defined data type* be created in C?
5. What is a recursive function? Give an example.
6. What will be the output of following code snippet?
   ```
   int a=1, b=2, c;
   a>b?c=3:c=0;
   printf("%d",c);
   ```
7. What is the problem with following declaration and assignment?
   ```
   float array[5];
   array[5]=0.5;
   ```
8. Explain following code snippet:
   ```
   int var=0;
   while(var=4){
        printf("%d",var);
        var++;
        if(var==3)
            break;
   }
   ```

**Attempt any 4 questions** (3×4=12 Marks)

9. Input an integer. If the number is even, input a character variable otherwise input a real number. Print the values accordingly.

10. Consider following details of a product 'X': product number (a 5-digit number), product type: A, B, C, D and year of manufacturing (4-digit year). Input the details for two such product items by creating appropriate user-defined data type. Print the input values.

11. Write the algorithm/program of sequential search. Consider the input elements as character variables.

12. Write the program to find the sum of following infinite series:

$$1+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+\frac{5}{6}+\frac{6}{7}+...$$

Mention how many terms are used in your program to find the sum.

13. Write a function to add the elements of a 1D integer array. How this function can be called/used in any other function?

## SECTION C

**Attempt any 2 questions** (2×6=12 Marks)

14. Write the program to sort an integer array of $N$ elements. The number $N$ is to be determined by the user.

15. Input a matrix of size 4×4. Find its transpose and store it into another matrix. Print both the matrices as output. What additional thing is required if the matrix is not a square matrix?

16. What problem do you think the following code may have? Rewrite it in an efficient way. Can a *switch* statement be used in place of *if* statement? Explain with proper reasons to support your answer.

```
int x=47;
if(x>=75)
      printf("A Good Number");
if(x>=50)
      printf("A Moderate Value");
if(x>=25)
      printf("A Small Entity");
if(x<25)
      printf("A Poor Data");
```

(End of the Paper)