## First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018
## Programming in C and Data Structures

Time: 3 hrs.

Max. Marks: 100

**Note:** *Answer any FIVE full questions, choosing
ONE full question from each module.*

### Module-1

1  a. What is a token? Explain different types of tokens in C-language. **(06 Marks)**
   b. What is an operator? Explain the arithmetic, relational, logical land bitwise operators in C-language. **(10 Marks)**
   c. Simplify the expression a + = b* = C - = 5 where a = 5, b = 3 and c = 7. **(04 Marks)**

### OR

2  a. List and explain primitive datatypes in C-language. **(06 Marks)**
   b. What is a variable? Explain the rules used for naming a variable. **(07 Marks)**
   c. Write a program to find the area and perimeter of a circle. **(07 Marks)**

### Module-2

3  a. Explain ternary operator with an example. **(04 Marks)**
   b. What is goto statement? Explain the disadvantages of a goto statement. **(06 Marks)**
   c. What is a loop? Explain the different types of loops in C-language. **(10 Marks)**

### OR

4  a. Write a C program to compute sin(x) using Taylor series :

$$\sin(x) = x - \left(\frac{x^3}{3!}\right) + \left(\frac{x^5}{5!}\right) - \left(\frac{x^7}{7!}\right) + ----$$

**(10 Marks)**

   b. List the difference between break and continue statements. **(06 Marks)**
   c. Explain nested for loop with an example. **(04 Marks)**

### Module-3

5  a. What is an array? Explain the declaration and initialization of two dimensional arrays with example. **(06 Marks)**
   b. Write a C-program to sort the given numbers in ascending order using bubble sort technique. **(06 Marks)**
   c. Explain any four string manipulation library functions with examples. **(08 Marks)**

### OR

6  a. What is a function? explain the different types of functions **(06 Marks)**
   b. Write a recursive program to find the factorial of a given number. **(10 Marks)**
   c. Explain different parameter passing techniques used in C functions. **(04 Marks)**

### Module-4

7  a. What is a structure? Explain the syntax of structure declaration with an example. **(06 Marks)**
   b. Write a C program to maintain an employee information consisting of three fields (empid, name, salary) using array of structures. **(10 Marks)**
   c. Explain with an example how fscanf( ) and fprintf( ) function is used with the file. **(04 Marks)**

**OR**

8  a. Write a program to copy the content of one file to other file. (08 Marks)
   b. What is a file? Explain the different modes in which the file can be opened. (06 Marks)
   c. What are command line arguments? Explain its parameters. (06 Marks)

## Module-5

9  a. What is a pointer? Mention the advantages of pointers. (04 Marks)
   b. List out the difference between malloc( ), calloc( ) and realloc( ) functions. (06 Marks)
   c. what is a stack? Write a program in C to perform various operations on stacks. (10 Marks)

**OR**

10 a. What is a macro? Write a program to find the square of a number using macros. (06 Marks)
   b. List out the difference between static memory allocation and dynamic memory allocation. (08 Marks)
   c. Explain : i) preprocessor directives   ii) symbolic constants. (06 Marks)

* * * * *