F.E. (Semester – II) (RC 2016-17) Examination, May/June 2018
PROGRAMMING LANGUAGES

Duration : 3 Hours | Total Marks : 100

Instructions *: 1) Answer* ***any 5*** *questions by selecting* ***two*** *questions from Part – **A**, **two** questions from Part – **B** and **one** question from Part – **C**.*
2) Make suitable assumptions ***if required****.*

PART – A

Answer **any two** questions from the following : **(2×20=40)**

1. a) List and explain the various components of a flowchart ? **4**

   b) Devise an algorithm and draw a flowchart to find the sum of digits of a number. **6**

   c) Describe the elements of C function with the help of an example. What are the advantages of using functions ? **6**

   d) Explain switch case with the help of an example. **4**

2. a) Write a C program to find sum of numbers from 1 to 100 that are divisible by 5. **6**

   b) Find the output of the following codes : **4**

```
#include <stdio.h>
int main() {
int x;
x = 10;
if(x > 10)
        x – = 10;
else if(x >= 0)
        x += 20;
else if(x < 10)
        x += 30;
else
        x – = 40;
printf("%d\n",x);
}
```

```
#include <stdio.h>
int main( ) {
int a = –10, b = 20;
if(a > 0 && b < 0)
        a++;
else if(a < 0 && b < 0)
        a--;
else if(a < 0 && b > 0)
        b-- ;
else
        b --,
printf("%d\n",a + b);
return 0;
}
```

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c) Differentiate between iteration and recursion. Write a recursive program to print the n^{th} term of the Fibonacci series. 6

d) Differentiate between call by value and call by reference with the help of an example. 4

3. a) Devise an algorithm and draw a flowchart to print the factorial of a given number. 6

b) Explain briefly the problem solving aspect. 4

c) Write a C program to print the multiplication table of a given number. 6

d) Find the output of the following code : 4

```
#include<stdio.h>
void xyz(int b) {
        ++b;
}
int main() {
        int b=200;
        xyz(b); xyz(b);
        printf("%d",b);
}
```


PART – B

Answer **any two** questions from the following : **(2×20=40)**

4. a) Define pointers. What are the advantages and disadvantages of pointers ? 4

b) What is a 2D array ? Explain with an example how to insert elements into a 2D array. 6

c) What is a union ? How is it different from structure ? Give example. 6

d) What are the 3 steps involved when reading from and writing to a file ? 4

5. a) Find the output of the following codes : 4

```
#include<stdio.h>
int main()  {
   void fun(char*);
   char a[100];
   a[0] = 'A'; a[1] = 'B';
   a[2] = 'C', a[3] = 'D';
   fun(&a[0]);
   return 0;
}
void fun(char *a)  {
   a++;
   printf("%c", *a};
   a++;
   printf("%c", *a);
}
```


b) Write a C program to find smallest element in a 1D array. 6

c) Write a C program using a structure to accept the details of n employees with fields such as employee id, name, qualification and salary. Print the details of the employees having salary greater than 20,000. 6

d) Illustrate writing to a file using C programs. 4

6. a) Write a C program to find the product of two numbers by passing pointers to function method. 4

b) Write a C program to count the number of even and odd elements in an array of numbers. 6

c) Illustrate with example, the concept of array of structures. 4

d) Write a C program to read data from keyboard and write it to a file with the name PL.txt. 6

PART – C

Answer **any one** question from the following : **(1×20=20)**

7. a) What is the importance of algorithm in computer science ? How does an algorithm differ from a program ? **5**

   b) Write a C program to create a user defined function called square that will print the square of the numbers from 1 to 10. **5**

   c) Explain the following String handling function. Demonstrate the use of each with the help of a C program : **5**

      i) strrev()

      ii) strcmp()

      iii) strlen()

      iv) strstr()

      v) strcat().

   d) Explain the concept of Dynamic Memory Allocation. **5**

8. a) Differentiate between 'for' loop and 'if-else' condition with the help of examples. **5**

   b) Explain the following with examples : **5**

      i) Function declaration and Prototypes.

      ii) Function definition and function call.

   c) Write a C program which adds two matrices of order m × n and print result in matrix form. **5**

   d) Explain following functions with syntax with respect to files : **5**

      a) putc()

      b) fprintf()

      c) fscanf()

      d) ftell()

      e) fopen.