SEM 2-4 – (RC 16-17)

F.E. (Semester – II) (Revised in 2016-2017) Examination, May/June 2017
PROGRAMMING LANGUAGES

Duration : 3 Hours | Max. 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 :

1. a) Explain the various aspects considered when implementing algorithm. **5**

   b) Define top down design. Explain how loops are constructed using this strategy. **5**

   c) List and explain the 5 unary operators in C with example. **5**

   d) Write a C program to find greatest amongst three numbers using nested if else. **5**

2. a) Differentiate between Imperative and Functional style of programming. **4**

   b) Devise an algorithm and draw a flowchart for summation of a set of numbers. **6**

   c) Write a C program to dispaly the sum of even and odd numbers between 1 to 100. **6**

P.T.O.

d) Pick out errors if any, otherwise write the output. 4

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i=0, x=0;
for(i=1;i<10;i++)
{
if(i%2==1)
x+=i;
else
x--;
printf("%d\t", x);
continue;
}
printf("\nx=%d",x);
getch();
}
```

3. a) Explain briefly the problem solving aspect. 4

b) Devise an algorithm and draw a flowchart for exchanging values of two variables by using a temporary variable. 6

c) Describe the elements of C function. What are the advantages of using functions ? 6

d) Pick out the errors if any, otherwise write the output. 4

```
#include<stdio.h>
#include<conio.h>
int prod(int, int);
void main()
{
int x=10, y=20;
intp,q;
    p=prod(x, y);
    q=prod(p,prod(x,2));
printf("p=%d q=%d",p,q);
getch();}
int prod(inta,int b)
{
    a=++a;
    b=--b;
return a*b;
}
```

PART – B

Answer **any two** questions from the following :

4. a) What is an 1D array ? Explain with examples compile time and run time initialization of 1D array. 4

b) The programmer has declared and initialised an array as shown to store marks of 4 subjects. 6

55	66	77	11

The programmer goes ahead and displays the array to his lab instructor. The lab instructor asks the programmer to search for 77 in the array and display the position. Write a C program to implement the above scenario.

c) Write a C program to find smallest and largest element in an array. 5

d) Write a C program to find the transpose of a matrix. 5

5. a) 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()

b) Write a C program to find the maximum number in an array using pointer. 5

c) What is the difference between structure and union ? Explain with an example. 4

d) Write a C program using structures to read information about n students and display the records corresponding to the first and last roll number. Members of the structure must be roll number, name and address. 6

6. a) Explain the following basic file operations supported in C : 4

i) Opening a file in read mode

ii) Closing a file.

b) Explain the different modes of a file. 4

c) Write a C program to read data from keyboard and write it to a file. 5

d) A file named FE.txt contains the given set of numbers (23, 1, 6, 58, 9, 7, 45, 99, 45, 1). Write a C program to read the numbers from the file and create two files named even.txt and odd.txt with even and odd numbers respectively. 7

PART – C

Answer **any one** question from the following :

7. a) Differentiate between iteration and recursion with help of an example. **5**

b) Pick out errors if any, otherwise write the output. **2**

i)
```
#include<stdio.h>
#include<conio.h>
void main()
{
char x='T';
switch(x)
        {
case 'F':printf("%c", 'C');
case 'I':printf("%c", 'P');
case 'T':printf("%c", 'R');
case 'G':printf("%c", 'O');
case 'B':printf("%c", 'G');
getch();
}
}
```

ii) **3**
```
#include<stdio.h>
#include<conio.h>
voidmain()
{
inti, j,;
for(j=1;j<=5;j++)
{
for(i=1;i<=(5-j);i++)
printf("+");
for(i=1;i<=j;i++)
printf("*");
getch();
}
}
```

c) Write a C program to find factorial of a number using pointer to function method. 5

d) Explain array of structures with the help of an example. 5

8. a) What is stepwise refinement ? Justify with an example. 5

b) Pick out the errors if any, otherwise write the output. 5

```
#include<stdio.h>
#include<conio.h>
void compute()
{
int a=4;
int c;
    c=++a*a*2;
printf("%d\n",c);
}
voidmain()
{ int a=5;
    a=++a;
compute();
printf("%d\n",a);
getch();
}
```

c) Trace the code given below. Assume the address of c = 1000. 5

```
#include<stdio.h>
#include<conio.h>
void main()
{
int* pc;
int c;
    c=22;
printf("Address of c:%u\n", &c);
printf("Value of c:%d\n\n",c);
pc=&c;
printf("Address of pointer pc:%u\n",pc);
printf("Content of pointer pc:%d\n\n",*pc);
    c=11;
printf("Address of pointer pc:%u\n",pc);
printf("Content of pointer pc:%d\n\n",*pc);
*pc=2;
printf("Address of c:%u\n",&c);
printf("Value of c:%d\n\n",c);
getch();
   }
```

d) Write a C program to pass a copy of the entire structure using functions. 5