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F.E (Sem-II) (Revised Course 2016-17)
EXAMINATION Nov/Dec 2019
Programming Languages

[Duration : Three 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 **2x20=40 Marks**

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

Question-1 **(20M)**

a) What do you mean by keywords in C? Explain their uses in a program. **(4)**
b) Write an algorithm and draw a flowchart to find the sum of a set of 'n' numbers entered by the user. **(6)**
c) Devise an algorithm and draw a flowchart to exchange the values of two variables by using a temporary variable. **(6)**
d) Explain the structure of a 'while' loop along with an example. **(4)**

Question-2 **(20M)**

a) Write a C program to count the number of even and odd numbers between 1 to 50. **(6)**
b) Find the output of the following codes: **(4)**

```
# include <stdio.h>
int main()
 {
  int x=100, y=100, z;
  z=x/y;
  z--;
  printf("%d %d %d", x%y,z,x/y);
  }
```

```
# include <stdio.h>
int main()
{
 int a=-2;
while (a<3)
 {
  if (a<0)
    printf("hi\n");
     else if (a>0)
    printf ("hello\n");
      else
          printf("bye\n");
       a++;
      }
     }
```

c) Write a recursive C program to find the factorial of a given number. State the differences between iteration and recursion. **(6)**

d) What do you mean by passing parameters to a function? Explain the two techniques of parameter passing to functions. **(4)**

Question-3 **(20M)**

a) What are the various elements of a C function? Explain with the help of an example and state the advantages of using functions. **(6)**

b) What is an algorithm? How does it differ from a program? **(4)**

c) Write a C program to accept the marks of 'n' students (one subject per student) and count the number of students who have achieved more than 50 marks. **(6)**

d) Find the output of the following code: **(4)**

```
# include <stadio.h>
  void  abc()
    {
     int x=4;
     int y;
    y=++x*x*2;
     printf("y=%d\n",y);
    }
    void main()
    {
      int x=5;
      x=++x;
       abc();
       abc();
      printf ("x=%d", x);
    }
```

Part B **2x20=40 Marks**

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

Question-4 **(20M)**

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

b) What is a 2D array? Explain with examples compile time and run time initialization of 2D array. **(6)**

c) State the differences between structures and arrays. Give an example of each. **(6)**

d) What are the 3 steps followed while accessing a file? **(4)**

Quetsion-5 **(20M)**

a) Find the output of the following codes: **(4)**

```
#include <stdio.h>
  void fun (int*, int*);
   int main()
   {
     int i=5, j=2;
     fun(&i, &j);
     printf ("%d, %d", i,j);
     return 0;
```

```
}
void fun (int *i, int *j)
 {
  *i=*i * *i;
   *j=*j * *j;
  }
```

b) Write a C program to delete the first element in a 1D array.

c) Write a C program using structures to accept details of 'n' students with the fields name, student_ID, percentage and age. Print the name of the student having the highest percentage among the 'n' students. **(6)** **(6)**

d) Write a C program to demonstrate reading from a file. **(4)**

Question – 6 **(20M)**

a) Write a C program to find the sum of two numbers by passing pointers to function method. **(4)**

b) Write a C program to display all the even elements from a 1D array. **(6)**

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

d) Write a C program to open a file in read only mode ad copy all its contents to another file. **(6)**

Part - C **1x20=20 Marks**

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

Question -7 **(20M)**

a) Find the output of the following codes: **(5)**

```
#include <stdio.h>
  int  main()
   {
    int  x=2, y=1;
     x*=x+y;
     printf("%d\n", x);
     return 0;
     }
```

```
#include <stdio.h>
  int  main()
   {
    int  x=2, y=2;
     x/=x/y;
     printf("%d\n", x);
     return 0;
     }
```

b) Write a C program to create a user defined function called square that will calculate the square of a number. **(5)**

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

i) strlen()

ii) strtr()

d) explain the concept of Dynamic Memory Allocation. **(5)**

Question-8 **(20M)**

a) Differentiate between 'for' loop and 'do-while' condition with help of examples. **(5)**

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

i) Function declaration and Prototypes

ii) Function definition and function call **(5)**

c) Write a program to search for an element in a 1D array and display its position (assume unique elements in the array) **(5)**

d) Explain following functions with syntax with respect to files:
   i) rewind()
   ii) fscanf()
   iii) fread()
   iv) fprintf()
   v) fseek()