COMPUTER SCIENCE

(330)

Time : 3 Hours]   [Maximum Marks : 60

Note :   (i)   Answer *all* questions.

(ii)   Marks allotted to each question are given in the right-hand margin.

(iii)   Use C++ programming language to answer programming questions.

1. Define the following terms briefly :   1×5=5

(a)   Memory

(b)   Bit

(c)   FTP

(d)   Windows Explorer

(e)   Topology

2. *(a)*   Differentiate between the following :   2×3=6

(i)   Logical and Physical records

(ii)   3GLs and 4GLs

(iii) Half-duplex and Full-duplex modes of communication

(b)   Briefly define URL. Also give an example of a URL.   4

3. *(a)*   Name the header file, to which the following built-in functions belong :

1×4=4

(i)   log( )

(ii)   toupper( )

(iii) strcpy( )

(iv)   gets( )

(b) *(i)* Write the equivalent C++ expression for the following algebraic expressions involving variables *P*, *Q* and *R* : 3

1. P^{5Q}

2. $\dfrac{3PQ\quad 2QR\quad 2PR}{3Q}$

(ii) Find out syntax error(s), if any, in the following program and rewrite the corresponding correct code underlining each correction made : 3

```
# include <iostream.h>
void main ( )
{    int x; y;
     cin<<x;
     for    (y = 1,  y<= x, y++)
           if x+y < 10
                  cout<<x+y;
           else cout<<x–y;
     cout<<x, y;
}
```

4. *(a)* What is a structure? Write any two differences between a structure and an array. Give an example of each. 4

(b) Give the output of the following programs : 3×2=6

(i)
```
# include <iostream.h>
# include <conio.h>
void main()
{
     char ch = 'A' ;
     while  (ch < 'F')
     {      switch(ch)
         {        case 'A' :
                  case 'B' :
                  case 'C' :  ch++ ;
                  default : ch+= 2 ;
         }
       cout<<ch<<"*\n" ;
     }
       cout<<ch<<"*\n" ;
}
```

(ii)
```cpp
# include <iostream.h>
# include <conio.h>
float x = 5·9 ;
void add (float x)
{
        x += 2 ;
        cout<< "\nx = "<<x ;
}

void main()
{   clrscr() ;
    cout<< "\nx= "<<x ;
    add(x) ;
    cout<< "\nx=" <<x ;
    getch() ;
}
```

5. *(a)* Write a program in C++ that will input 10 numbers from the user in a one-dimensional array and then sort this array in descending order using selection sort. The program should then display the sorted array. 5

(b) A binary file "BOOKS.DAT" contains structure variables corresponding to the following structure :

```cpp
struct Book
{       int BookNo ;
         char Book_name [20] ;
} ;
```

Write a program to input a book number and search the file for this book. If the book is found in the file, then display the book name and if the book is not found in the file, then display an appropriate message. 5

6. Answer the following questions briefly : 3×5=15

(a) Differentiate between Keywords and Identifiers in C++ with at least two examples of each.

(b) Differentiate between a Class and an Object.

(c) Define a class TravelPlan in C++ with the following descriptions :

Private members :

TravelCode	of type long
Destination	of type character array (string)
No_of_Travellers	of type integer
No_of_Buses	of type integer

Public members :

A constructor to assign initial values—Destination as "Jaipur", No_of_Travellers as 10, No_of_Buses as 1.

A function Plan( ) which allows the user to enter TravelCode, Destination and No_of_Travellers. Also assign the value to No_of_Buses as per the following conditions :

No. of Travellers	No. of Buses
Less than 20	1
20 to 39	2
40 or more than 40	3

(d) Define single inheritance, multiple inheritance and multilevel inheritance.

(e) Find the output of the following program segment :

```
int a = 5;
int *b = &a, *c ;
c = b ;
cout<<a<<"\t"<<*b<<endl;
a++ ;
cout<<a<<"\t"<<*b<<endl;
(*c)-- ;
cout<<a<<"\t"<<*b<<endl;
```

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