This question paper contains 8+3 printed pages]

Your Roll No.....

5177

B.Sc. Phy.Sc./Sem. I **B**

Paper-CSPT 101 : COMPUTER SCIENCE—I

Fundamentals of Computer Programming

(Admission of 2010 and onwards)

Time : 3 Hours *Maximum Marks : 75*

(Write your Roll No. on the top immediately on receipt of this question paper.)

All questions are compulsory.

1. Find out the error in the following program segments and write the *correct* code :

(*i*)

```
# include<iostream.h>
        void main( )
{int sum[2, 4], i, j;
            for (i=0; i<2; i++)
            for (j=0; j<=3; j++)
    {cout<<sum;
    }
}
```

(*ii*)
```
# include<iostream.h>
float mul(float x, float y)
{
    return(x*y);
    }
void main( ) {
    char a, b;
    cin>>a>>b;
    cout<<mul(a, b);
        }
```

(*iii*)
```
int *p, a[10];
p=a;
for (int i=0; i<9; i++)
{
cout << p[i];
p=p*2;
    }
```

(*iv*) struct num

```
{int a;
float b; } s1, s2, s3;
s1.a=5, s1.b=4.3;
s2.a=8; s2.b=7.4;
s3 = s1+s2;
```

2×4

2. Indicate the expected output in the following program segments :

(*i*)

```
int res1, res2, val=1000, n1=1000, n2=200;
res1=n1+val>1500 ? 100 : 200;
res2=n2+val>1500 ? 100 : 200;
cout<<res1;
cout<<res2;
```

2

(*ii*) int i = 5;

```
for( ; i= =0;)
cout<< "hello";
cout<<"bye";
```

2

(*iii*) for (int i=0; i<10; i++)

```
{   if(1%2= =0)
continue;
cout<, "i="<<i<<endl;
}
```

2

(*iv*) int x = 5;

```
do
{cout << "x="<<x<<endl;
x=-1;
}
while (x>0);
```

1

(v) int a=10; b=20, c, d;

```
c= (a= =100 || b>200);
cout<< "c="<< c;
d=(a==100 && b >200);
cout<<"d="<<d;
```

2

(vi) int p=10;

```
int q = p++ * ++p;
cout<<"p="<<p<<"q="<<q;
```

2

(vii) For (int i = 5; i > 4; i+)

```
cout<<"i="<<i<<"\n";
```

1

3. (i) Create a class Flight having private data members

flight no. of type int

Dp_time char array of size 20

A_time char array of size 20

are of type float.

Write default constructor for this class. Write a function getdata( ) to input the data values. Write an inline function show( ) to display the flight details of a given flight. Define an array of objects of class flight and call getdata( ) function to input values for n flights. 10

(*ii*) Given a C++ program code :

```
class teach
{    int time;
     public :
     seminar( )          // Function 1
                {
                time=30; cout<<"Semin starts now";
                }
                void lecture( ) // Functn 2
```

```
{   cout<<"Lectures in the seminar hall";
}
    seminar(int duration)          // Function 3
    {
    time=duration; cout<<"Seminar starts now";
    }
};
```

Which concept of object oriented programming is illustrated by Functional and Function3 ? Write another function 'seminar' using the same concept that takes name of the teacher as a parameter and displays the name of the teacher. Write a suitable program code that makes calls to these functions. 5

(*iii*) Define a class 'Mystring' that contains an array of chars as private data member. Write a program in C++ to compare the equality of two strings using operator overloading. 5

(*iv*) Consider the following class hierarchy

```
class A
    { int a, b;
      protected :
      int m, n;
          public :
          int p, q;
              void Fa (void);
    };
```

```
class B : private A
{   int da, db;
    public :
    void insideB (void);
};
class C : public A
    {   public :
        float f1, f2;
        void insideC ( );
};
```

(l) Which data members can be accessed by function insideC( ) of class C. 3

(2) Name the data members that can be accessed by objects of class C. 3

(v) Write a function in C++ to compute m^n. Make n a default argument with value 1. 4

4. (*i*) What is an exception ? Explain its use in C++. Give an example of a program segment where multiple catch handlers are used. 5

(*ii*) WAP in C++ to define a namespace functions for defining functions to subtract two integers and to multiply two integers and use this namespace in main function to call these functions. 4

(*iii*) Write a function to increment value of an integer passed as parameter using 'call by reference' method. Show the initial and final values in the main function. 3

(*iv*) WAP in C++ to open a file and write name, age and roll_no of students in this file. Read the same file and display its contents. 5

5. Define the following : 2×4=8

(1) Multiple and hierarchical inheritance

(2) Virtual functions

(3) Encapsulation

(4) Access Specifies (public, private and protected).