

3 (Sem-5) CSC M 1

2 0 1 6

COMPUTER SCIENCE

(Major)

Paper : 5-1

(OOP using C++)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct option of the following :

1×7=7

(a) Identify the following syntax :

```
friend return type operator symbol  
                (arg1 [,arg2])
```

```
{
```

```
    Body of operator friend function
```

```
}
```

(i) Friend function

(ii) Operator overloading

**(iii) Operator overloading with friend
functions**

(iv) Function definition

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(b) A program segment is given below :

```
class string
{
private :
char str[SIZE];
public :
string ()
{
strcpy (str, " ");
}
};
```

Here, string () is a

- (i) class
 - (ii) member function
 - (iii) constructor
 - (iv) header file
- (c) What does the following program print?

```
#include<stdio.h>
void f (int*p, int*q)
{
p=q;
*p=2;
}
int i=0, j=1;
int main ()
{
f (&i, &j);
cout<<i<<j;
return 0;
}
```

- (i) 2 2
- (ii) 2 1
- (iii) 0 1
- (iv) 0 2

(d) If Test is a class, then the following statement is known as (assume there is no syntax error) :

```
Test obj = Test(10, 20);
```

- (i) explicit constructor call
 - (ii) implicit constructor call
 - (iii) passing parameter
 - (iv) formal argument
- (e) If s1="Guwahati" and s2="Tezpur", then the function strcmp (s1, s2) will return a value which is
- (i) less than (<) 0
 - (ii) greater than (>) 0
 - (iii) equal to (=) 0
 - (iv) any nonzero
- (f) Which one of the following is enumerated data type?
- (i) enum shape (circle, square, triangle)
 - (ii) enum shape (circle, square, triangle);
 - (iii) enum shape {circle, square, triangle};
 - (iv) enum shape [circle, square, triangle];

(4)

- (g) Static member function can access
- (i) only public data member
 - (ii) public data member and member function
 - (iii) only static data member
 - (iv) public and protected data member

2. (a) Write the names of the header files to which the following functions belong : 2

- (i) islower ()
- (ii) toascii ()
- (iii) clrscr ()
- (iv) strcpy ()

(b) Differentiate between 'float' and 'float &' statements. 2

(c) Write a program to print the following output using FOR loops : 2

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

(d) What is data hiding? How is it accomplished? 2

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(Continued)

(5)

3. Answer any *three* questions of the following :

5×3=15

(a) Explain the following with respect to object-oriented programming :

Private, Public, Protected

(b) What is the difference between 'a member function' and 'a conventional normal function'?

(c) What is an array of class objects? How is it useful?

(d) What is a nested class? How is a nested class defined and declared in C++ ?

(e) Define a class named **triangle** to represent a triangle using the lengths of the three sides. Write a constructor to initialize objects of this class, given the lengths of the sides.

4. Answer any *three* questions of the following :

10×3=30

(a) Define a class **string** with the following data members :

```
char *p;
int size;
```

Write member functions to do the following (without using library function) :

(i) Length of the string

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- (ii) Compare two strings
- (iii) Copy one string to another
- (b) Write a program to overload 'new' and 'delete' operators.
- (c) Write C++ program for the following :
 - (i) The basic pay of an employee is input through the keyboard. His dearness allowance is 125% of basic pay and house rent allowance is 15% of basic pay. Write a program to calculate his gross salary [gross salary = basic pay + dearness allowance + house rent allowance].
 - (ii) The distance between two cities (in km) is input through the keyboard. Write a program to convert and print this distance in meter, inch and centimeter.
- (d) Write a C++ program to copy the content of a binary file into another file.
- (e) Differentiate between 'compile-time polymorphism' and 'run-time polymorphism' with the help of a program.
