

COMPUTER SCIENCE(083-2k5)

Class – XII

TIME : 3 Hrs

Maximum Marks : 70

1. (a) (i) List the advantages of OOPS over conventional programming. [2]
(ii) Explain Scope resolution operator with examples. [2]
(b) Name the header files which include the following built-in functions: [1]
(i) malloc() (ii) strcmp() (iii) clrscr() (iv) put()

(c) Write a UDF to find the Factorial of a given number using recursion. [3]

(d) Find the error(s) and correct it : [2]

```
# include <iostream.h>
struct student
{
    char name[20];
    int age;
}s1;
    student *s2 ;
s2->name = 'LATHA';
    s1.age =20;
}
```

2. (a) Give the output : [2]

```
# include <iostream.h>
inline int multiply (static int x,static int y)
{
    return ( x*y);
}
void main ( )
{ int a =10, b= 5;
  cout<< multiply(a,b) ;
}
```

(b) Give the output of the following program segment: [3]

```
class Base1 { protected: int b;
public :
Base1(int x)
{ b= x ; cout << "Constructing Base1 \n" ; }
~ Base1 ( )
{ cout << "Destructing Base1 \n"; }
};
class Base2 { protected : int a;
public :
Base2(int y)
{ a = y ; cout << "Constructing Base2 \n" ; }
~ Base2 ( )
{ cout << "Destructing Base2 \n"; }
};
class Derived : public Base2, public Base1
{ int d ;
public :
```

```

Derived ( int i , int j, int k) : Base2(i), Base1(j)
{
    d = k ;
    cout<<"Constructing Derived. \n" ; }
    ~ Derived ( ) { cout<<"Destructing Derived. \n" ; }
    void show ( )
        { cout << " 1. "<<a<< " 2. "<<b<<" 3. "<<c<<"\n" ;
};

Void main ( ) { Derived ob( 12, 13, 14) ;
                ob.show( ) ;
                }

```

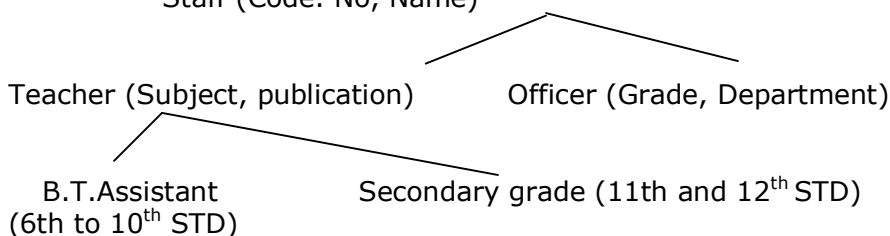
- c) i) Write a C++ program to merge two strings [2]
- ii) Is destructors necessary? Justify your answer [1]
- iii) What is the use of this pointer? [1]
- iv) Distinguish between binary and text files. [1]

- 3. (a) What do you understand by pointers to structures? [2]
Explain with examples
- (b) Design a class named bank account with the following details: [2]

| Data members | Member functions |
|-----------------------|--|
| Name of the Depositor | - to assign initial values |
| Account number | - deposit an amount |
| Type of Account | - withdraw amount after checking balance |
| Balance Amount | - display name & balance |

Use the class to declare an array of 10 objects. Write the complete program to call the member functions according to user choice.

- (c) Design an inherited class for the following: [1]
Staff (Code. No, Name)



- 4. (a) Write a C++ program to find the transpose of a given matrix [4]
- (b) For an array of float numbers A[10,10]. Find the address of A[6,8], if A[0,0] is stored in location 8000. Assume each float number requires 8 bytes. [2]
- (c) Using Bubble sort technique sort the given numbers and show the list after each pass. (19, 20, 91, 86, 20,18,64,48) . [3]
- (d) Write a function in C++ to insert and delete an element in a circular queue to store integer data. [3]
- (e) Deduce the given expression into postfix form using STACK and show each step. (TRUE,FALSE,AND,NOT,FALSE,FALSE,FALSE,AND,NOT) [3]

- 5. (a)What is the use of DDL and DML [2]
- (b) List the various views of a DBMS. [1]
- (c) Distinguish between union and Cartesian product with suitable

Examples in relational algebra

- (d) Can a candidate key can be used as a primary key ? Justify.

[2]

[1]

TABLE: STUDENT

| Regn.no | Name | Class | Section | Age | Board | Marks | Grade | Fees |
|---------|-------|-------|---------|-----|--------|-------|-------|------|
| 1006 | RADHA | 11 | A | 16 | CBSE | 57% | D | 1000 |
| 1003 | ABI | 12 | B | 17 | MATRIC | 83% | B | 500 |
| 1001 | NANDA | 12 | B | 19 | CBSE | 95% | A | 1000 |
| 1004 | RAGU | 12 | B | 18 | CBSE | 86% | B | 1000 |
| 1002 | HARI | 11 | A | 17 | MATRIC | 73% | C | 500 |
| 1005 | SRINI | 11 | A | 17 | MATRIC | 91% | A | 500 |

Write the commands for the following queries: -

[9]

- Display all the matric board students of class 12A sorted by Regn. No.
- Display a report, listing name, class, section amount of fess paid a year assuming that the fees is paid every quarter.
- To count the number of students with Grade = 'A'.
- To add a new new column Remarks with suitable data type.
- Indicate 'pass' in remarks column, if a student has scored more than 60% otherwise mark 'Fail'.
- Moderate the Marks by 5% for students whose marks are below 90%.
- List those records in which the students has passed
- Give output for the following commands:
 - Select SUM (fees) from STUDENT where Grade = "B";
 - Select AVG (fees) from STUDENT where class = "12A";
 - Select MIN(Avgmark) from STUDENT where stream = "CBSE" ;
 - Select COUNT (DISTINCT Board) from STUDENT ;

6. (a) Express $F(x, y, z) = xyz + yz'$ in S-O-P form.

[1]

- (b) Obtain a simplified form for

[2]

$F(u,v,w,z) = \Sigma(5,7,8,9,10, 11,13, 15)$ using Karnaugh map and Implement it using universal gates..

- (c) Explain with a diagram how to convert base-10 number to base-16 Number using combinational circuits [2]

- (d) A combinational circuit having 4 input and one output produces 1 when [2]

(i) Every input is '0'

(ii) Even number of 1's

(iii) At least one input to be '1'

Draw the truth table and represent in SOP and POS form.

- (e) State and prove Demorgan's theorems.

[2]

- (f) What is the advantage of full adder over half adder

[1]

7. (a) What is Web hosting ?

[1]

- (b) Distinguish between LAN and WAN

[1]

- (c) What is the use of gateways?

[1]

- (d) Differentiate between Hubs & Switches

[1]

- (e) What is the need of Security in networks and how it is achieved? [1]