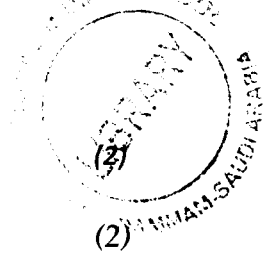


**INTERNATIONAL INDIAN SCHOOL, DAMMAM**  
**Second Terminal Examination - November 2014**  
**Computer Science - Class XII**

Time: 3 Hrs

Marks: 70



Set A

1. (a) What is function overloading? Give an example.
- (b) What are access specifiers? Give example.
- (c) Define a class Report with the following specification:  
Private members:

(2)

(4)

admno : integer  
name : String  
marks : array of 5 integers  
grade : single character

A function calc\_grade() that calculates and assigns the grade as follows:

<u>Total Marks</u>	<u>Grade</u>
>=400	A
300 - 399	B
200 -299	C
150-199	D
<150	E

Public members:

A function get\_input() to input the values of admno, name, all five marks and invoke the calc\_grade() function.

A function display() to display the contents of all data members along with the highest marks among the five subject marks.

- (d) Define a class Book with the following representation:  
Private Members:

(4)

Book Number : integer  
Book Name : String  
Author : String  
Publisher : String  
Price : Float  
NoCopies : integer  
NoIssued. : integer

Public members:

A function input() to input details of book.

A function issue() to issue a book from library to the member after checking its availability, if available then issue a book by increasing value of "NoIssued" by 1, otherwise display error message "Not available in library".

A function ret\_book() to get back a book from library members and decrease value of "NoIssued" by 1, if it is zero then display error message "not issued this book from library".

A function display() to display details of book.

(e) Answer questions (i) to (iv) based on the following code:

(4)

```
class Chairperson
{
    long Cid;
    char Cname[20];
protected:
    char description[40];
    void allocate();
public:
    Chairperson();
    void assign();
    void show();
};
class Director
{
int Did;
    char Dname[20];
protected:
    char profile[30];
public:
    Director();
    void input();
    void output();
};
class Company: public Director, Chairperson
{
int Cid;
    char city[20], country[20];
public:
    Company();
    void enter();
    void display();
}
```

(i) Which type of inheritance is illustrated in this code?

(ii) Name the data members which can be accessed by an object of class Company.

(iii) Name the member functions which can be accessed by an object of class Company.

(iv) Name the members which can be accessed by member functions of class Director.

2. (a) Consider the following structure. (3)

```
struct address
{
    int id;
    char home_add[50];
    int phone;
}
```

Write a function in C++ which accepts an array of addresses and its size as arguments and sorts it in ascending order of id using Bubble Sort.

- (b) Write a function in C++ that takes an array and its size as arguments and finds the sum of all numbers ending with the digit 2 i.e., having 2 in the units place. (2)

- (c) Write a function in C++ to accept a two-dimensional array of integers and its dimensions as arguments and display elements of its middle row and middle column. [Assume that the array has odd dimensions e.g. 3X5, 7X5 etc.] (2)  
Example: if the two dimensional array is

2	3	13
6	10	9
7	14	5
12	12	1
4	15	11

The output will be:

Middle row 7 14 5

Middle column 3 10 14 12 15

- (d) An array Arr[15][20] is stored in memory along the column with each element occupying 4 bytes. Find the base address and the address of the element Arr[3][3], if the element A[4][5] is stored at the address 1200. (3)
- (e) Write a function in C++ to insert and an element into a circular Queue implemented using an integer array. (4)
- (f) Convert the following infix expression to postfix. Show the stack status for every step. (2)  
 $(A+4)*10-(40/B)/2$
- (g) Evaluate the following postfix notation of expression. Show stack status for each operation: (2)  
True, False, NOT, AND, True, False, AND, OR

3. (a) Go through the program segment and answer the question that follows: (1)

```
class Product
{
intprodid;
  char prodname[20];
  float price;
  public:
  void input();//function to input values
  void show();// function to display records
  float getid(){return prodid;}
};

void changerec(int id)
{
fstream file;
fil.open("prod.dat",ios::in|ios::out|ios::binary);
  Product p;
int count=0, found=0;
  while(!found &&file.read((char*)&p,sizeof(p)))
  {
    count++;
    if(id==p.getid())
    {
      found=1;
cout<<"Enter new data";
p.input();
      _____ //statement 1
      _____ //statement 2
    }
  }
  if(found==1) cout<<"record updated";
file.close();
}
```

- (i) Write statement1 to position the write pointer at the position of the record to be changed.
- (ii) Write statement 2 to write the new record at that position.
- (b) Write a function in C++ to read a text file "ESSAY.TXT" and count the no of occurrences of the word 'and' in it. (2)

- (c) Consider a binary file "QUIZ.DAT", containing objects of the following (3)

```
class:
class Participant
{
intpno;
  char pname[20];
int points;
  public:
  void enterdata()
```

```

{cin>>pno; gets(pname); cin>>points;}

void showdata()
{cout<<pno<<pname<<points;}

intgetpoints()
{return points;}
};

```

Write a function in C++ to read and display the details of participants with points in the range 1-5.

4. (a) Explain the terms in the context of RDBMS: (i) Selection (ii) Foreign key (2)
- (b) Based on the following tables, write the SQL commands for the statements (i) to (vi) (1 mark each) and outputs for SQL queries (vii) to (x) (1/2 mark each) (8)

#### Stock

ItemNo	Item	Dcode	Qty	UnitPrice	StockDate
5005	Ball Pen 0.5	102	100	16	31-Mar-10
5003	Ball Pen 0.25	102	150	20	01-Jan-10
5002	Gel Pen Premium	101	125	14	14-Feb-10
5006	Gel Pen Classic	101	200	22	01-Jan-09
5001	Eraser Small	102	210	NULL	19-Mar-09
5004	Eraser Big	102	60	10	12-Dec-09
5009	Sharpener Classic	103	160	8	23-Jan-09

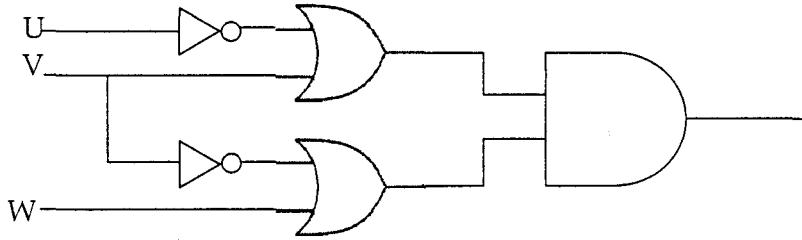
#### Dealers

Dcode	Dname
101	Reliable Stationers
102	Class Plastics
103	Clear Deals

- i. To display details of all the items in ascending order of Stockdate.
- ii. To display the Itemno and Itemname of all items whose quantity (Qty) is in the range 100-200 (limits included).
- iii. To display the number of items supplied by each Dealer.
- iv. To list all item names with their dealer names.
- v. To display the dealer names who supply items with unit price more than 15.
- vi. To display all itemnames containing the word 'pen';
- vii. SELECT COUNT(DISTINCT Dcode) FROM Stock;
- viii. SELECT AVG(UnitPrice) FROM Stock WHERE Qty>150;
- ix. SELECT MAX(Dcode) FROM Dealers;
- x. SELECT Dname, ItemNo FROM Stock, Dealers WHERE Stock.Dcode=Dealers.Dcode AND StockDate>'01-Jan-10';

5. (a) Verify the following algebraically: (2)  
 $(A' + B') \cdot (A + B) = A' B + A \cdot B'$

- (b) Write the equivalent Boolean expression for the logical circuit: (2)



- (c) Represent the Boolean expression  $(X + Y) \cdot Z$  with the help of NAND gates only (2)

- (d) Express in the POS form, the Boolean function  $F(A, B, C)$ , the truth table for which is given below: (1)

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

- (e) Reduce the following Boolean expression using K-map: (3)  
 $F(u, v, w, x) = \sum(3, 5, 7, 10, 11, 13, 15)$

6. (a) Expand the terms: (i) URL (ii) WLL (iii) HTTP (iv) GPRS (2)

- (b) Name two protocols used for sending/ receiving e-mails. (1)

- (c) What is the difference between virus and worms? (2)

- (d) What are cookies? (1)

- (e) What are cyber crimes? Give examples. (2)

- (f) What is a web browser? (1)

- (g) Name the law in India to deal with Cyber crimes. (1)