

INTERNATIONAL INDIAN SCHOOL, DAMMAM
First Terminal Examination, June 2015
Computer Science - Class XII
Set B

Time: 3 Hrs
Marks: 70

1. (a) Find the correct identifiers out of the following: (2)
switch, For, float, _pow, 2ndNum, mid-val, CHAR, If
- (b) What is the difference between ordinary function and member function in C++? Explain with example. (2)
- (c) Write the related library function name based upon the given information: (2)
- i. To copy one string into another.
 - ii. To check whether given character is adigit.
 - iii. To terminate the program
 - iv. To take a string from standard input
- (d) Name the header files required to compile execute the following program: (1)
- ```
typedef char Txt[30];
void main()
{
Txt n1="Good Morning";
for(int c=0;n1[c]!='\0';c++)
if(isalpha(n1[c]))
n1[c]=n[c]+1;
else
n1[c]='*';
puts(n1);
}
```
- (e) Rewrite the following C++ program after removing all the syntactical errors (if any), underlining each correction. (2)
- ```
#include<iostream.h>  
#define PI=3.14  
void main()  
{  
float r;a;  
cout<<"enter any radius";  
cin>>r;  
a=PI*pow(r,2);  
cout<<"Area="<<a  
}
```
- (f) Find the output of the following program[Assume that all required header files are included]: (2)
- ```
void Encode(char Msg[])
{
int size=strlen(Msg);char temp;
for(int k=0;k<size/3;k++)
```



```

 if (Msg[k] >= 'A' &&Msg[k] <= 'Z')
Msg[k]='$';
 else
 {
temp=Msg[k];
Msg[k]=Msg[size-k-1];
Msg[size-k-1]=temp;
 }
 }
void main()
{
 char Line[]="April$May";
 Encode(Line);
 cout<<Line<<endl;
}

```

- (g) Find the output of the following program[Assume that all required header files are included]: (3)

```

intvar=12;
voidfunc(int&p, intq)
{
p=p-q;
q=p*10;
 cout<<p<<'@'<<q<<'\n';
}
void main()
{
intvar=8;
func(, :var, var);
cout<<var<<'@'<<:var<<'\n';
func(var, :var);
cout<<var<<'@'<<:var<<'\n';
}

```

- (h) Find the output of the following C++ program[Assume that all required header files are included]: (3)

```

class Class
{
intCno,total;
char section;
public:
Class(int no=1)
{
Cno=no;
section='A';
total=30;
}
void admission(int c=20)
{
section++;
}
}

```

```

total+=c;
}
void ClassShow()
{
cout<<Cno<<": "<<section<<": "<<total<<endl;
}
};
void main()
{
Class C1(5),C2;
C1.admission(25);
C1.ClassShow();
C2.admission();
C1.admission(30);
C2.ClassShow();
C1.ClassShow();
}

```

- (i) Study the following program and select the possible output(s) from (i) to (iv): Also write the maximum and minimum values that can be assigned to the variable Num [Assume that all required header files are included]. (2)

```

void main()
{
 randomize();
 int Num, i, j;
 Num=random(3)+2;
 char Chance []="ABCDEFGHIIJK";
 for (i=1; i<=Num; i++)
 {
 for (j=Num; j<=7; j++)
 cout<<Chance[j];
 }
 cout<<endl;
}

```

- |         |        |       |      |
|---------|--------|-------|------|
| (i)     | (ii)   | (iii) | (iv) |
| BCDEFGH | CDEFGH | EFGH  | FGHI |
| BCDEFGH | CDEFGH | EFGH  | FGHI |
|         |        | EFGH  | FGHI |
|         |        | EFGH  | FGHI |

2. (a) Define the term Data hiding. Illustrate with an example (2)
- (b) Compare Object Oriented Programming with Procedural Programming (Any two points). (2)
- (c) Answer the questions (i) to (iv) after going through the following code: (4)
- ```

class eval
{

```

```

    char title[20];
    int year;

    public:

    eval(intx)      // function 1
    {
        year=x;
    }

    eval(eval&e);  // function 2

    ~eval();       // function 3

    void show()    // function 4
    {
    cout<<"Title: "<<title<<"\n"<<"Year: "<<year;
    }
};
void main()
{
    _____ //line 1
    _____ //line 2
} //Ends Here

```

- (i) Name the phenomenon displayed by function 1 and 2 together.
- (ii) Fill in the blank statements in line 1 and line 2 to execute function 1 and function 4 respectively.
- (iii) Write the definition for function 2.
- (iv) Which function will be invoked at } //Ends here? What is this function referred as?
- (v) What is the difference between the following statements?
 eval S(2010);
 eval S=eval(2010);

(d) Define a class Stock with the following specification: (4)

Private members:

icode : integer (item code)
 iname : String (item name)
 price : float (price of each item)
 qty : integer (quantity)
 discount : float (discount %)

A function calc_disc() that calculates and assigns the discount as

follows:

| Quantity | Discount |
|----------|----------|
| <=50 | 0 |
| 51 - 100 | 5 |
| >100 | 10 |

Public members:

A constructor to assign initial values as follows:

- i. icode and qty as 0.
- ii. iname as "Noname".
- iii. price and discount as 0.0

A function get_input() to allow the user to enter the values of icode, iname, price and qty and invoke the calc_disc() function.

A function display() to display the contents of all data members.

- (c) Define a class Computer with the following specifications: (4)

Private members:

processortype : String
processorspeed : Integer
cost : Float

Public members:

A constructor to assign initial values as follows:

- (i) processortype as "NULL"
- (ii) processorspeed as 0
- (iii) cost as 0.0

A function calc_cost() that takes speed as parameter and calculates and returns the cost as follows

| Speed | cost |
|------------------|-----------|
| 4000MHz | Rs. 30000 |
| <4000 and >=2000 | Rs. 25000 |
| <2000 | Rs. 20000 |

A function enter_data() to take the values of processortype and processorspeed as user input and calls the function calc_cost().

3. (a) What is Cartesian product? Explain with an example. (2)
- (b) Answer the questions based on the table given below: (4)

Table: Students

| StuNo | StuName | Mob | Subject | TutorID |
|-------|-----------|------------|-----------|---------|
| 1 | Leena | 9856012321 | Math | 100 |
| 2 | Surpreeth | 9995565402 | Chemistry | 200 |
| 3 | Neha | 9539645125 | Physics | 300 |
| 4 | Deepak | 9444764213 | Chemistry | 200 |

- (i) Name the columns which can be considered as (a) Candidate keys and (b) Primary key
- (ii) Define Degree and cardinality. Write down the degree and cardinality of the table Students.

(c) Consider the following tables:

(10)

Write the SQL commands for the statements (i) to (vii) [7 X 1 = 7 marks]

and outputs for SQL queries (viii) to(xii) [6 X ½ = 3 marks]

Item

| I_Id | Itemname | Manufacturer | Price |
|------|-------------------|--------------|-------|
| PC01 | Personal Computer | ABC | 35000 |
| LC05 | Laptop | ABC | 55000 |
| PC03 | Personal Computer | XYZ | 32000 |
| PC06 | Personal Computer | COMP | 37000 |
| LC03 | Laptop | PQR | 57000 |

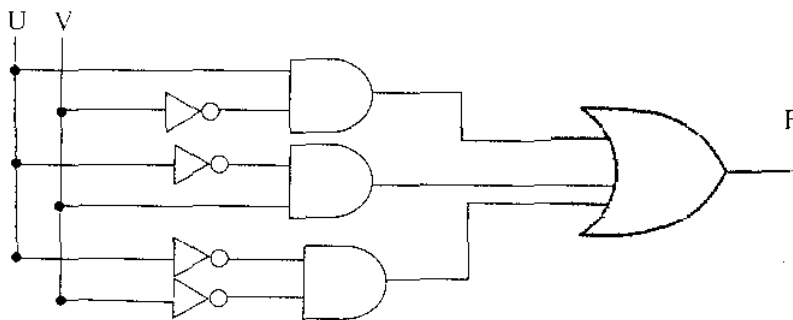
Customer

| C_Id | Customername | City | I_Id |
|------|--------------|-----------|------|
| 01 | N Roy | Delhi | LC03 |
| 06 | H Singh | Mumbai | PC03 |
| 12 | R Pandey | Delhi | PC06 |
| 15 | C Sharma | Delhi | LC03 |
| 16 | A Agarwal | Bangalore | PC01 |

- (i) To display the details of those customers whose address is Delhi.
- (ii) To display the details of items whose price is in the range of 35000 to 55000 (both values included).
- (iii) To display the number of customers from each city.
- (iv) To display the Customername, City from table Customer and Itemname and price from table Item, with their corresponding matching I_Id.
- (v) To display the Item names total price for all items where total price is price+price*5/100

- (vi) To increase the price of all items by 1000 in the table Item.
- (vii) To delete the row of C Sharma from the Customer table.
- (viii) `SELECT DISTINCT City FROM Customer;`
- (ix) `SELECT Itemname, MAX(Price) FROM Item GROUP BY Itemname;`
- (x) `SELECT PRICE FROM Item WHERE Manufacturer='PQR' || Itemname='Laptop';`
- (xi) `SELECT Cutomername, Manufacturer FROM Item, Customer WHERE Item.I_Id=Customer.I_Id;`
- (xii) `SELECT Itemname, Price*100 FROM Item WHERE Manufacturer = 'ABC';`
- (xiii) `SELECT C_Id FROM Customer WHERE City LIKE "%b%";`

4. (a) State Absorption Laws. Verify one of them algebraically. (2)
- (b) Draw the Logical circuit diagram for the following Boolean expression using NAND gates only: (2)
 $A \cdot (B + C')$
- (c) Write the dual of the Boolean expression: (1)
 $pq + p'q'$
- (d) Write the equivalent Boolean expression for the following logic circuit: (2)



- (e) Write Product Of Sum expression of the function F (p,q,r,s) from the given truth table: (1)

| p | q | r | s | F |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 1 |
| 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 0 |
| 1 | 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 |

- (f) Prove algebraically: (2)
 $(X' + Y') \cdot (X + Y) = X' \cdot Y + X \cdot Y'$
- (g) Write the equivalent Canonical Sum of Product (SOP) form: (2)
 $F(A,B,C) = \pi(1,3,6,7)$
- (h) Reduce the following Boolean expression using K-map: (3)
 $F(u,v,w,x) = \sum(0,1,4,5,6,7,8,9,11,15)$
- (i) Reduce the following Boolean expression using K Map: (3)
 $F(A,B,C,D) = \pi(5,6,7,8,9,12,13,14,15)$