Roll Number		

SET B

INDIAN SCHOOL MUSCAT
FINAL TERM EXAMINATION
COMPUTER SCIENCE

CLASS: XII **Sub. Code: 083** Time Allotted: 3 Hrs

13.11.2018 Max. Marks: 70

General Instructions:

(A) All questions are compulsory where internal choice is given attempt accordingly

(B) Programming Language with C++

1 a 4

```
class Building
{
int OrderId;
char Address[20];
protected:
float Advance;
public:
Building();
void Book();
void View(); };
class Floor:public Building
{ int WallArea,ColorCode;
protected:
char Type;
public:
Floor();
void PBook();
void PView();
};
class Bill : public Floor
{
float Charges;
void Calculate();
public :
Bill();
void Billing();
void Print(); }
```

i) Which type of Inheritance is illustrated in the above declaration?

ii) Name the data members accessed by object of class Bill.

iii) Write the names of all the data members, which are directly accessible from the member functions of class Floor.

iv) Write the names of all the member functions, which are directly accessible from an object of class Bill.

OR

Consider the following class furniture :

```
class cluster
{
char name[30];
float cost;
protected :
int FNO;
public :
cluster( )
 { FNO=999;
cost= 0}
void INPUT( )
{ cin>>FNO;
gets(name);
cin>>cost;  }
float getcostl()
{ return cost;
}
};
```

Write a code in C++ to publically derive class 'National' from class 'Cluster'. Class National has the following additional members :

Private Data Members :

Fname string , No_Of_Item integer

Protected data members :

Name string, FCost float

Public Member functions :

FINPUT( ) : To enter Dname, No_Of_mem ,

FOUTPUT( ) : To display the data members on the screen.

b. Write a function in C++ to count and display the number of words starting with 'B' or 'K' in the file "Katha.txt". 2

OR

Write a function in C++ to display the lines ending with 'g' from the file "ITD.txt".

c. Given the binary file Vehicle.DAT, containing records of the following class Vehicle type: 3

```
class Vehicle
{  int V_No;
```

```
char V_Name[20];
float Milage;
public:
void enter()
cin>> V_No ;
 gets(V_Name) ;
cin >> Milage;    }
void display( )
{  cout<< V_No ; cout<<V_Name ;
cout<< Milage;  }
float RETURN_Milage( )
{   return Milage;     }         };
```

Write a function in C++, that would read contents from the file Vehicle.DAT and display the details of Vehicle with mileage between 75 to 120.

OR

Given the binary file Vehicle.DAT, containing records of the following class Vehicle type:

```
class Vehicle
{  int V_No;
char V_Name[20];
float Milage;
public:
void enter()
cin>> V_No ;
 gets(V_Name) ;
cin >> Milage;    }
void display( )
{  cout<< V_No ; cout<<V_Name ;
cout<< Milage;  }
float RETURN_Milage( )
{   return Milage;     }         };
```

Write a function in C++, that would append 3 more records of Vehicle into the file Vehicle.Dat .

d. Write the command to place the file pointer at the 15th record starting position using seekp() or seekg() command. File1 is an object of above class 'Vehicle' and record name is 'Vehilcle_Info'. 1

OR

Differentiate between ios::out and ios::in

2 a Write a user-defined function SUM(int A[][5], int R, int C) in C++ to find and display the sum of all the values, which are ending with 4 (i.e., unit place is 4). 2

22	34	56	64	160
48	16	74	96	45

The output should be : Sum of the numbers ending with 4 = 172.

OR

Write a user-defined function SUM(int A[][5], int R, int C) in C++ to find and display the sum of

each ROW of the 2-d array.

b. Write a function Get1from2() function in C++ to transfer the content from two arrays First[ ] and Second[ ] to arrayAll[ ]. The even places (0,2,4…..) of array All[] should get the contents from the array First[ ] and odd places (1,3,5….)of the array All[ ] should get the contents from the array Second[ ] 3

OR

Suppose A,B,C are arrays of size m,n,m+n respectively. Array A is stored in ascending order and array B is in descending order. Write a function to receive 3 arrays and their sizes to store the elements of A and B into C in descending order.

c. Evaluate the following postfix expressions. Show the status of stack after execution of each operation separately : 2 x2

(i) 2,4, ^ , 5, +,6,3,-,5,+,* (ii) True, False, AND, True, True, NOT, OR, AND

d. Convert the given infix expressions into its equivalent postfix form showing stack status at each step – 2x2

(i) A * (B + D) / E - F - (G + H / K) (ii) (A+B)*(C^(D-E)+F)-G

e. An array M[-3…18][-8….37] is stored in the memory along the column with each of its elements occupying 8 bytes. Find out the base address and the address of an element M[2][5], if the element M[5][10] is stored at address 4000. 2

OR

An array B [30][10] is stored in the memory along the row with each element occupying 4 bytes of storage. Find the base address and address of the element B [10][4], if the location B [3][3] is stored at the address 1500.

3 a Let us assume Data[10][10] is a two-dimensional array, which is stored in the memory along the row with each of element of type float. Find the address of the element Data[6][5], if the element Data[2][4] is stored at the memory location 3200. 2

b. Implement the following stack in C++ 3

```
class Arraystk {
        float  info[10];
        int top;
        public:
          // member functions
        };
```

Write a C++ function to push elements into the stack Arraystk.

c. Write the definition of a member function Remove() for a class QUEUE in C++, to delete an ITEM from a dynamically allocated QUEUE items. Consider the following code is already written as a part of the program. 3

```
struct ITEM
{
int ID;
char name[20];
Packet *LINK;
};
class items
{
```

```
ITEM *Front, *Rear;
public:
items(){Front=NULL;Rear=NULL;}
void Remove();
~items();
};
```

OR

Write the definition of a member function Insert() for a class QUEUE in C++, add a ITEM in a dynamically allocated QUEUE items. Consider the following code is already written as a part of the program.

```
struct ITEM
{
int ID;
char name[20];
Packet *LINK;
};
class items
{
ITEM *Front, *Rear;
public:
items(){Front=NULL;Rear=NULL;}
void Insert();
~items();
};
```

d. Write a function in C++ to perform insert operation in a static circular Queue containing singers information (represented with the help of an array of structure singer). (3) 3

```
struct singer
{
long studid;
char sname[20];
};
```

4 a What do you understand by Cartesian product explain with an example. 2

b. Consider the following table and answer the questions: 2

Table : Book

Book_id	Book name	Author_name	Cost
C0001	Fun with Python	Lata Kapoor	79
F0001	Java Script	William Hopkins	90
T0001	My First c++	Brain & Brooke	109
T0002	C++ Brain works	A.W. Rossaine	88

i) Suggest the most suitable attribute that can be selected as primary key.

ii) What is the degree and cardinality of the above table.

c Write SQL queries for (i) to (vi) and find outputs for SQL queries (vii) to (x), which are based on the tables. 6+2

Table: VEHICLE

VCODE	VEHICLETYPE	PERKM

V01	VOLVO BUS	150
V02	AC DELUXE BUS	125
V03	ORDINARY BUS	80
V05	SUV	30
V04	CAR	18

Table: TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K.Niwal	2015-12-13	200	V01	32
103	Fredrick Sym	2016-03-21	120	V03	45
105	Hitesh Jain	2016-04-23	450	V02	42
102	Ravi Anish	2016-01-13	80	V02	40
107	John Malina	2015-01-13	65	V04	2
104	Sahanubhuti	2016-01-28	90	V05	4
106	Ramesh Jaya	2016-04-06	100	V01	25

(i) To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

(ii) To display the CNAME of all the customers from the table TRAVEL who are traveling by vehicle with code V01 or V02.

(iii)To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2015-12-31' and '2015-05-01'.

(iv) To display all the details from table TRAVEL for the customers, who have travel distance more than 120 KM.

(v) To display all the details from table TRAVEL for the customers, who have travel distance more than 200 KM in ascending order of NOP.

(vi) To display all information from table Travel in the ascending order of CNAME.

(vii) SELECT COUNT(*),VCODE FROM TRAVEL GROUP BY VCODE HAVING COUNT(*)>1;

(viii) SELECT DISTINCT VCODE FROM TRAVEL;

(ix) SELECT A.VCODE, CNAME, VEHICLETYPE FROM TRAVEL A, VEHICAL B WHERE A.VCODE=B.VCODE AND KM<90;

(x) SELECT CNAME, KM*PERKM FROM TRAVEL A, VEHICLE B WHERE A.VCODE=B.VCODE AND A.VCODE='VO5';

5 a Verify the following using Boolean Laws: 2

U'+V=U'V'+U'V+U.V

b. Draw a Logical Circuit Diagram for the following Boolean Expression: 2

(X'+Y).Z+W'

c. Write the SOP & POS form of a Boolean function R, which is represented in a truth table as follows: 2

A	B	C	R
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

d. Obtain the minimal SOP form for the following boolean expression using KMap. 3
$F(P,Q,R,S)=\Sigma(0, 1, 4, 5, 6, 7, 8, 9, 11, 15)$

e. Reduce the following Boolean expression using K-Map: 3

$F(A,B,C,D)=\prod (0,1,2,4,5,6,8,10,11,14,15)$

6 a Differentiate between Bridge and Router. 1

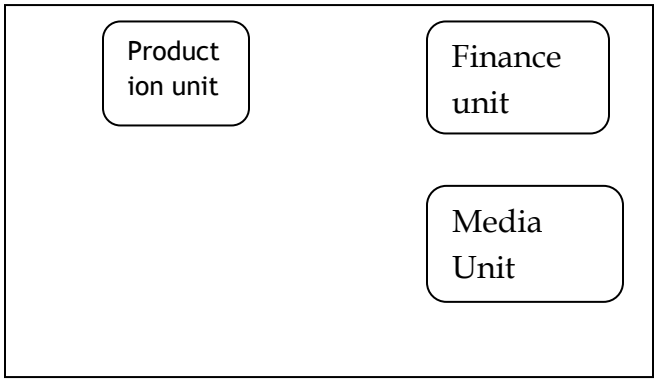
b. What do you mean by Indian IT act 1

c. Give the full form of the following: 2
(i) WLL (ii) GPRS

d. Name two protocols used in sending messages via electronic mail. 2

e. " TURKEY Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company has planned to set up their main office units in Chennai at three locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit". The company has its corporate unit in New Delhi. A rough layout of the same is as follows: 4

INDIA



FROM	TO	DISTANCE
Production Unit	Finance Unit	70 mtrs
Production Unit	Media Unit	15 km
Production Unit	Corporate Unit	2112 KM
Finance Unit	Media Unit	15 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their office units:

Production Unit	150
Finance Unit	35
Media Unit	10
Corporate Unit	30

i) Suggest the kind of network required (out of LAN,MAN,WAN) for connecting each of the following office units:

• Production Unit and Media Unit • Production Unit and Finance Unit

ii) Which one of the following devices will you suggest for connecting all the computers within each of their office units?

• Switch/Hub • Modem • Telephone

iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local offices in Chennai for very effective (High Speed) communication?

• Ethernet cable • Optical fibre • Telephone cable

iv) Suggest the cable layouts & topology of the connection between the production, Media unit and corporate unit.

End of the Question Paper