Roll Number		

SET C

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 Give the following class definition answer the question that is follow: 4

```
class WORLD
{ private : float A; protected :
        char B[20];
        int *C;
        public:
        void READ( );
        void WRITE( ); };
        class COUNTRY: public WORLD
        { long double D;
        protected:
        long E; public:
        void INPUT( );
        void OUTPUT( ); };
         class STATE : private COUNTRY
        { private: short F;
        public:
        void INSTATE( );
        void OUTSTATE( ); };
```

i) Which type of inheritance has been illustrated in the above code.
ii) Name the data members which can be accessed by the objects of STATE class.
iii) Name the member functions that can be accessed by the objects of STATE class.
iv) How many bytes will be occupied by an object of class STATE ?

OR

```
class Product
{ int PNo;
protected:
float Price;
public:
void  Enter( );
void  Display( );
}
```

Write a code in C++ to publically derive class 'ITEM' from class 'Product'. Class ITEM has the

following additional members :
Private Data Members :
Iname string , NOI integer
Protected data members :
Name string, SCost float
Public Member functions :
Accept( ) : To enter Iname, NOC,Name,SCOST
Display( ) : To display the data members on the screen.

b. Write a function CountYouMe( ) in C++ which reads the contents of a text file story.txt and counts the words You and Me (not case sensitive). For example, if the file contains: 2
You are my best friend.
You and me make a good team.
I will never lose a good friend like you.
And you never forget me.
The function should display the output as
Count for You: 4
Count for Me : 2

OR

Write a function Mycount( ) in C++ which reads the contents of a text file story.txt and copies the contents to another file ' newstory.txt' except the blank spaces.

c. Write a function in C++ to search and display details, whose destination is 3
"Al SEEB" from binary file "Bus.Dat". Assuming the binary file is containing the objects of the following class:

```
class BUS
{ int Bno; // Bus Number
char From[20]; // Bus Starting Point
char To[20]; // Bus Destination
public:
char * StartFrom ( ); { return From; }
char * EndTo( ); { return To; }
void input() { cin>>Bno>>; gets(From); get(To); }
void show( ) { cout<<Bno<< ":"<<From << ":" <<To<<endl; }
};
```

OR

Write a function in C++ to modify the destination of record whose Bus number is given by the user from binary file "Bus.Dat" . Assuming the binary file is containing the objects of the following class:

```
class BUS
{ int Bno; // Bus Number
char From[20]; // Bus Starting Point
char To[20]; // Bus Destination
public:
char * StartFrom ( ); { return From; }
char * EndTo( ); { return To; }
void input() { cin>>Bno>>; gets(From); gets(To); }
void Modify(){ gets(To); }
};
```

d. Observe the following program carefully and fill in the blanks using seekg( ) and tellg( ) functions : 1

```
#include<fstream.h>
class school
```

```
{ private :
char scode[10],sname[30];
 float nofstu;
public:
void INPUT( );
void OUTPUT( );
 int COUNTREC( );   };
int school::COUNTREC( )
{ fstream fin("scool.dat",ios::in|ios::binary);
_____ //statement 1 to move pointer to end of file
 int B=_____ //statement 2 to return no of bytes till current pointer position
 int C=B/sizeof(school);
 fin.close( );
 return C;  }
```

OR

Write the statement to point to the 11th record of a file containing records of the structure 'employee' .

2 a Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays product of each column. 2

If 2D array is

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

Then the output should appear as :
Product of column 1 = 6
Product of column 2 = 12
Product of column 3 = 18
Product of column 4 = 24
Product of column 5 = 30

b. Write a C++ function to sort an array having 7 integers in descending order using ***insertion sort method*** 3

OR

Write a C++ function to sort an array having 7 integers in descending order using ***Bubble sort method***

c. Evaluate the following postfix expressions. Show the status of stack after execution of each operation separately : 2 x2
(i) 8, 14,+ ,31 , - , 18 ,6 , / , 10 , * , - (ii) True,False,NOT,OR,True,AND,False,OR

d. Convert the given infix expressions into its equivalent postfix form showing stack status at each step – 2x2
(i) A+[(B+C)+(D+E)*F]/G (ii) (TRUE && FALSE)|| !(FALSE ||TRUE)

e. A two dimensional array A[58][23] having real numbers(float), is stored in the memory along the column, find out the memory location for the element A[27][14], if an element A[10][15] is stored at the memory location 400. 2

3 a An array A[-5..10][7..15] is stored in the memory with each element requiring 2 bytes of storage ,if the base address of A is 150, find out memory locations of A[8][12], if the content is stored along the row. 2

OR

An array A[-5..10][7..15] is stored in the memory with each element requiring 4 bytes of storage ,if the base address of A is 1500, find out memory locations of A[8][12], if the content is stored along the column.

b. Write a function in C++ to insert a node containing Employee information, from a dynamically allocated stack of Employee implemented with the help of the following structure. 3

```
Struct worker
{
int WNo;
char Name[20];
worker *Link;
};
```

c. Consider the following portion of a program, which implements spectators Queue for a cinema hall. : 3

```
struct LIST
 { int ticketno;
char showtime[20];
LIST *next;
   };
   class Q
   { LIST *f, *r;
   public :
   Q( )
   { r=NULL;
   f=NULL; }
   void Insert( );
   void Delete( );
   void Show( );
   ~Q( );
   };
```

Define Insert( ) function outside the class.

OR

Define Delete() function outside the class.

d. Write the definition of a member function Del_PLAYER() for a class CIRQUEUE in C++ to delete a player in a static circular queue of PLAYER consider the following declaration : 3

```
struct player { int PID;
char PNAME[20];
const int size=20;
class CIRQUEUE
{ PLAYER Ar[size];
int Front, Rear;
public:
CQUEUE( )
{
Front = -1;
Rear = -1;
}
void Del_PLAYER(); // To delete player in a static circular queue
};
```

4 a Differentiate between candidate key and alternate key in context of RDBMS. 2

b. Consider the following table: 2

Table : RESORT

RCODE	PLACE	RENT	TYPE	STARTDATE
R101	GOA	15000	5 Star	23 Jan 2008
R102	HIMACHAL	12000	4 Star	12 Nov 2007
R103	KERALA	12500	5 Star	18 Mar 2006

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. **Consider the following tables ARTIST and GALLERY. Write SQL commands for the statements (1) to (6) and give outputs for SQL queries (7) to (10).** 6+2

Table: ARTIST

ID	A_NAME	TITLE	PRICE	TYPE
114	SINGH	GEO	150000	MODERN
115	A GHOSH	MIRAGE	560000	ABSTRACT
106	RUPANGI M	RAIN WORKS	120000	ABSTRACT
107	*B* VIRENDRA	GLASS	300000	MODERN
118	RUPEN	GLITZ	260000	NATURE
209	V PRATHAM	LINES	400000	ABSTRACT
110	N ARJUN	AGES	370000	ABSTRACT
111	KAVITA SWAMI	MAZE	43000	MODERN

TABLE :GALLERY

ID	FEES	G_NAME	D_OF_DISPLAY
113	**5000**	**RENIM**	10-12-10
103	**30000**	**AMYA**	**01-02-11**
110	**6000**	**TRIKHA**	**02-11-10**

1. To display A_NAME(Artist Name) and TITLE of all Modern type paintings from table ARTIST.
2. To display all the details of all the Artists in descending order of TITLE from table ARTIST.
3. To display the A_NAME, G_NAME and Date of Display (D_OF_DISPLAY) for all the Artists who are having a display at the gallery from the tables ARTIST and GALLERY.
4. To display the highest price of paintings in each type from table ARTIST.

5. To print the details of paintings where Artistname is starting with the letter 'R'.

6. To delete the record of 'Kavita Swami'.

7. SELECT A_NAME, TITLE, PRICE FROM ARTIST WHERE PRICE BETWEEN 350000 AND 500000;

8. SELECT DISTINCT TYPE FROM ARTIST ;

9. SELECT MAX(FEES),MIN(D_OF_DISPLAY) FROM GALLERY;

10. SELECT COUNT(*) FROM ARTIST WHERE PRICE<300000;

5 a State and prove De Morgan's First theorem. 2

b. Draw the logic circuit for the expression **(X+Y)'+Y'Z+Z'** 2

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

P	Q	R	G
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

d. Obtain the reduced SOP for the following boolean expression using KMap. 3
$F(U,V,W,X)=\sum(0,1,2,3,5,6,7,10,11,12,14,15)$

e. Reduce the following Boolean expression using K-Map: 3
$F(A,B,C,D)=\pi(1,2,3,4,6,7,8,9,10,11,13,15)$

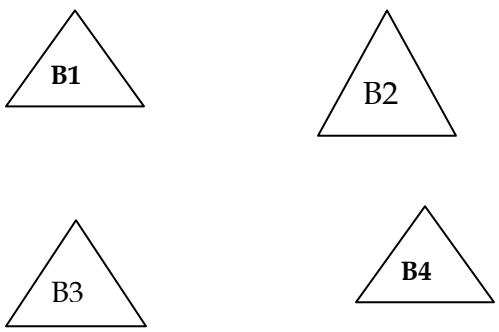
6.a What is the difference between MAN and WAN. 1

b. Name any 2 unguided media. 1

c. What is the difference between Circuit switching and Packet switching. 2

d. Write the full form : 2
i) TCP/IP
ii) GPRS

e. East and West Public Ltd. has decided to network all its four buildings as shown below 4



Distance between buildings	
B1 AND B2	20 mts
B2 AND B3	50 mts
B1 AND B3	120 mts
B3 AND B4	70 mts
B1 AND B4	65 mts
B2 AND B4	90 mts

Building	No. Of. Computers
B1	40
B2	45
B3	110
B4	70

(i) Suggest the cable Layout(s) connecting the building and topology.
(ii) Where do you think to place to house the server with a suitable reason.
(iii) Suggest the placement of the following device with justification:
(a) Repeater (b) Router
(iv) The organization is planning to link its head office situated in Delhi with the office at Srinagar. Suggest an economic way to connect it. The company is ready to compromise the speed of connectivity.

End of the Question Paper