KENDRIYA VIDYALAYA SANGATHAN CHENNAI REGION
COMMON PREBOARD EXAMINATION 2008-09
COMPUTER SCIENCE

CLASS: XII **Time : 3 Hrs.**
Max. Marks : 70

Instructions :
(i) **All** questions are compulsory.
(ii) Programming Language : **C++**

1. (a) How are the following related to one another? **(2)**
(i) Arrays and structures (ii) Structures and classes.
(b) Name the header files to which the following functions belong: **(1)**
(i) isdigit() (ii) strcmp()
(c) Rewrite the following program after removing the syntax errors if any. Underline each corrections . **(2)**

```
#include<iostream.h>
void large(int &a, int &b);
int main()
{
int a = 17;
int x = 2;
int &b;
b = x;
large(b, a);
cout>>a>>b;
}

void large(int &a, int &b)
 {
 if(a>b)
a=-1;
else
b=-1;
}
```

(d) Find the output of the following program : **(3)**

```
#include<iostream.h>
#include<string.h>
#include<ctype.h>
void main()
{
char *ch = ”Our 3 Boys”;
for(int p=0;p<strlen(ch);p++)
if(isdigit(ch[p]))
ch[p] = ’-‘;
else if(isupper(ch[p]))
ch[p] = tolower(ch[p]);
else if(islower(ch[p]))
```

```
ch[p] = toupper(ch[p+1]);
else if(ch[p] == ' ')
ch[p] = '*';
cout<<ch<<endl;
}
```

(e) Find the output of the following program: **(2)**

```
#include<iostream.h>
void main()
{
int L = 5, B = 10, R;
for(int J = 1;J <= 2;J++);
{
R = --L * B++;
cout<<"\nResult = "<<R;
}
}
```

(f) Give the output of the following program: **(2)**

```
#include<iostream.h>
int a = 10;
void main()
{
void demo(int &, int, int*);
int a = 20,b = 5;
demo(::a, a, &b);
cout<<::a<<"\t"<<a<<"\t"<<b<<endl;
}
void demo(int &x, int y, int *z)
{
a  += x;
y *= a;
*z = a + y;
cout<<x<<"\t"<<y<<"\t"<<*z<<endl;
}
```

2. (a) What does inheritance mean? Differentiate between single inheritance and Multiple Inheritance. **(2)**

(b) What will be the output of the following program segment. **(2)**

```
class example
{
static int A;
int B, C;
public:
example(int I, int J)
{
B=I;
C=J;
A++;
```

```
}
void display()
{
cout<<"B = "<<B<<endl;
cout<<"C = "<<C<<endl;
}
static void disp()
{
cout<<"A = "<<A<<endl;
}
};
int example::A;
void main()
{
example Obj1(7,5), Obj2(7,6), Obj3(2,7);
Obj.display();
Example::disp();
Obj2.display();
Obj3.display();
}
```

(c) Declare a class having following: **(4)**

Data members :

Private Members :

name_of_Society	char (30)
house_number	integer
number_of_members	integer
flat	char(10)
income	float

Member Functions:

Public members:

input() – to read data members.

Alloc_flat() – To allocate flat according to income

Income >=50000 - Flat " A Type"

Income >=25000 and Income <50000 - Flat " B Type"

Income <25000 - Flat " C Type"

show() – to display all details

(d) Answer the questions (i) to (iv) based on the following code: **(4)**

```
class olympics
{
int no_of_events;
char country_name[25];
protected:
void initialize();
```

```
public:
olympics();
void olympicsentry();
void olympicsdisp();
};

class outdoorgame : public olympics
{
char eventname[20];
int eventcode;
public:
outdoorgame();
void outdoorentry();
void outdoordisp();
};

class hockey : public outdoorgame
{
int no_of_players;
char venue[25];
public:
hockey();
void hockeyentry();
void hockeydisp();
};
```

(i) Which type of inheritance is shown in the above example?

(ii) How many bytes will be required by an object of the class hockey?

(iii) Write names of all the data members accessible from member functions of the class hockey?

(iv) Write names of all the member functions, which are accessible from an object of the class outdoorgame?

3 (a) Write a function in C++ which accepts an integer array and its size as arguments and exchanges the value of first half side elements with the twice value in second half side elements of the array [i.e. when the second half side elements are exchanged they have to be changed to the value in that location multiplied by 2 and then exchanged.] **(4)**

Example: If an array of 8 locations initially contains the elements as :

5, 12,3,6, 7,1,9,15

then the function should rearrange the contents of the array as

14, 2, 18, 30, 5, 12, 3, 6

(b) An array MAT[20][12] is stored in the memory column wise with each element occupying 2 bytes of memory. Find out the base address and the address of element MAT[15][10] , if the location of MAT[2][4] is stored at the address 1000. **(4)**

(c) Give the necessary declarations of a linked list implementation queue containing integer type elements . Also write a user defined function in C++ to delete an integer type number from the queue. **(4)**

(d) Write a function in C++ to print the rowsum and column sum of a matrix. **(2)**

(e) Convert the expression (True && False) || ! (False ||True) to postfix expression. Show the contents of the stack at every step. **(2)**

4. (a) Differentiate tellg() and seekg(). **(1)**

(b) Write a function in C++ to count the number of blanks present in a text file "TOUR.DAT". **(2)**

(c) Assume the class PRODUCTS defined below, Write functions in C++ to perform the following: **(3)**

(i) Write the objects of PRODUCTS to a binary file.

(ii) Read the objects of PRODUCTS from binary file and display them on screen when Pname has value 'Ponds Powder"

```
class PRODUCTS
{
int Pcode;
char Pname[20];
float Price;
public :

void getproducts()
{
cin>>Pcode>>Pname>>Price;
}

void showproducts()
{
cout<<Pcode<<Pname<<Price<<endl;
}

char *getproduct()
{
return Pname;
}

};
```

5. (a) What are Views? What happens if we try to drop a table in which a view exists? Can we create view of a view? **(2)**

(b) Consider the following table LIBRARY. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii). **(6)**
(Answer the outputs by just considering the following table contents only)

Sl No.	Title	Author	Subject	Quantity	Price
1	Data Structure	Lipschute	DS	4	320.00
2	Turbo C++	Robort Lafore	Prog	3	213.00
3	COBOL	Stern	Prog	6	515.00
4	Basic for Beginners	Norton	Prog	2	430.00
5	Dbase Dummies	Palmer	DBMS	3	230.00

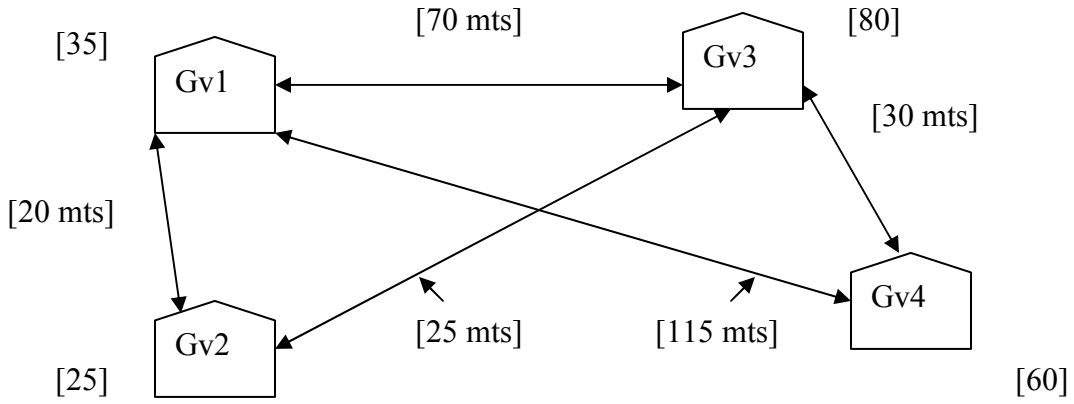
(i) To display the Title of all books with Price 100 and 300.(Both values included)
(ii) To display Title and Author of all the books having type Prog.
(iii) To display list of all the books with price more than 300 in ascending order of Quantity.
(iv) To increase the price of all the items by 315 in the table LIBRARY.
(v) SELECT MIN(price) FROM LIBRARY;
(vi) SELECT SUM(Price * Quantity) FROM LIBRARY WHERE Quantity >3;
(vii) SELECT COUNT(DISTINCT Subject) FROM LIBRARY;
(viii) SELECT Subject ,MAX(Price),COUNT(*) FROM LIBRARY GROUP BY Subject;

6. (a) Verify algebraically X (X + Y) = X. **(2)**
(b) Represent the Boolean expression X.Y'+Z with the help of NOR gates only. **(1)**
(c) Write the Product of Sums form of the function G(U,V,W), truth table representation of G is as follows : **(2)**

U	V	W	G
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

(d) Reduce the following Boolean expression using K-Map: **(3)**
F(M,N,O,P)= Σ(0,1,3,4,5,6,7,9,10,11,13,15)

7. (a) What is a Gateway? **(1)**
(b) Expand the following terms with respect to Networking : **(2)**
(i) FTP (ii) NFS
(iii) HTTP (iv) URL
(c) What are Cookies? **(1)**
(d) Global Village Enterprises has following four buildings in Hyderabad city. **(4)**



[ ] – Shows computers in each building

→ - Shows distance

Computers in each building are networked but buildings are not networked so far. The company has now decided to connect building also.

(a) Suggest a cable layout for these buildings

(b) In each of the buildings, the management wants that each LAN segment gets a dedicated bandwidth i.e bandwidth must not be shared. How can this be achieved?

(c) The company also wants to make available shared Internet access for each of the buildings. How can this be achieved?

(d) The company wants to link its headoffice in GV1 building to its another office in Japan.

(i) Which type of transmission medium is appropriate for such a link?

(ii) What type of network would this connection result into?