**Sample Paper- 2013**

**Subject: Computer Science**

**Class XIIth**

Time: 3 hrs M.M.70

***General Instructions:***

*(i) All Questions are compulsory*

*(ii) Programming Language: C++*

**Q1. Answer the following questions.**

1. Differentiate between Actual parameters and Formal Parameters. Give example to illustrate both. 2

(b) Name the header file(s) that shall be needed for successful compilation of the following C++ code. 1

void main( ) {

char String[20];

gets(String);

strcat(String,”CBSE”);

puts(String); }

(c) Rewrite the given snippet after removing the syntactical error(s), if any. Underline each correction.2

structure Wheelers\_Club {

int mem number;

char name;

char memtype[]=”LIG”;

};

void main() {

Wheelers\_club m1,m2;

cin<<”Member Number”;

cin>>memnumber.m1;

cout<<”\n Member name”;

cin>>m1.membername;

m1.memtype=”TEMP”;

m2=m1;

cin<<”\n Member number ”<<m2.memnumber;

cin<<”\n Member name “<<m2.memname;

cin<<”\n Member number “<<m2.memtype; }

(d) What will be the output of the following program: 2

#include<iostream.h>

#include<ctype.h>

int x=10;

void fun(int &a,int b,int &c) {

int x=5;

c += x;

a\*= **::**x;

b += c; }

void main() {

int y=1, x=2;

fun(y, **::**x, x);

cout<<x<<”@”<<y<<”@”<<**::**x;

cout<<endl;

fun(**::**x, x, y);

cout<<x<<”@”<<y<<”@”<<**::**x; }

**(e)** The following code is from a game, which generate a set of 4 random numbers. Pihu is playing

this game, help her to identify the correct option(s) out of the four choices given below as the possible set of such numbers generated from the program code so that she wins the game. Justify your answer. 2

#include<iostream.h>

#include<stdlib.h>

const int LOW=25;

void main()

{ randomize();

int POINT=5, Number;

for(int I=1;I<=4;I++)

{ Number=LOW+random(POINT);

cout<<Number<<":" <<endl;

POINT--;

}

}

(i) 29:26:25:28: (ii) 24:28:25:26:

(iii) 29:26:24:28; (iv) 29:26:25:26:

(f) Find the output of the following program 3

#include <iostream.h>

#include <string.h>

#include <ctype.h>

void update(char \*s)

{

For int i=0;i<strlen(s);++i)

If(isupper(s[i] && i%2==0)

s[i]=s[i]+1;

Else if(isupper(s[i] && i%2!=0)

s[i]=s[i]-1;

Else

s[i]=s[i-1];

}

void main()

{char s[20]={"AlLThEVeryBesT!!!"};

cout<<"Original Data : "<<s<<endl;

update(s);

cout<<"Updated Data "<<s;

}

**Q2. Answer the following questions.**

(a) How is polymorphism implemented in C++? Give an example to illustrate. 2

**(b)** Answer the questions (i) and (ii) after going through the following class: 2

class Seminar

{

int Time;

public:

Seminar() //Function 1

{

Time=30;cout<<"Seminar starts now"<<end1;

}

void Lecture() //Function 2

{

cout<<"Lectures in the seminar on"<<end1;

}

Seminar(int Duration) //Function 3

{

Time=Duration;cout<<"Seminar starts now"<<end1;

}

~Seminar() //Function 4

{

cout<<"Vote of thanks"<<end1;

} };

i) In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/called?

ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together? Write an example illustrating the calls for these functions.

(c) Define a class FOOD in C++ with following description: 4

**Private Members:**

* Code of type int
* FoodName of type string
* Sticker of type string
* FoodType of type string
* A member function GetType() to assign the following values for foodType (according to sticker) as per the given conditions:

|  |  |
| --- | --- |
| **Sticker** | **FoodType** |
| GREEN | Vegetarian |
| YELLOW | Contains Egg |
| RED | Non- Vegetarian |

**Public Members:**

* A function FoodIn() to allow user to enter values for Code, FoodName, Sticker and call function GetType() to assign respective FoodType.
* A function FoodOut() to allow user to view the contents.

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

class CUSTOMER {

int Cust\_no;

char Cust\_Name[20];

protected:

void Register();

public:

CUSTOMER();

void Status();

};

class SALESMAN {

int Salesman\_no;

char Salesman\_Name[20];

protected:

float Salary;

public:

SALESMAN();

void Enter();

void Show();

};

class SHOP : private CUSTOMER , public SALESMAN {

char Voucher\_No[10];

char Sales\_Date[8];

public:

SHOP();

void Sales\_Entry();

void Sales\_Detail();

};

1. Write the names of data members which are accessible from objects belonging to class SHOP.
2. Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.
3. Write the names of all the members which are accessible from member functions of class SHOP.
4. How many bytes will be required by an object belonging to class SHOP?

**Q3. Answer the following questions.**

(a) If two dimensional array C[5……9, -4…..10] is stored using column major representation, then calculate the address of C[8,6], if the base address is 100 and each element requires 4 bytes of memory. 3

(b) Define a function SWAP()in C++ to interchange the first column elements with the second column elements, for a two dimensional integer array and its size (r & c) passed as the arguments of the function. 3

**Eg: If the array containts: After swapping it should be:**

|  |  |  |  |
| --- | --- | --- | --- |
| **3** | **1** | **4** | **2** |
| **4** | **4** | **5** | **4** |
| **5** | **7** | **6** | **7** |
| **4** | **8** | **7** | **9** |

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **3** | **4** | **2** |
| **4** | **4** | **5** | **4** |
| **7** | **5** | **6** | **7** |
| **8** | **4** | **7** | **9** |

(c) Write a function that accepts int array and its size as arguments and replace each even element by its double and each odd element by its half. 2

(d) Give necessary declarations for a linked (dynamic) queue containing name and float type number; also write a user defined function in C++ to insert and delete a node from the queue. 4

(e) Convert the following infix expression to its equivalent postfix expression Showing stack contents for the conversion: 2

(A-B)/(C^(D+E)\*F)-G

**Q4 Answer the following questions.**

a) Observe the program segment given below carefully and fill in the blanks marked as statment1 and statement2 using write() and remove() functions for performing the required task. 1

#include<fstream.h>

class Emp {

int Eno;

char name[20];

public :

//function which will delete the data of a specific employee

void deleteRec(int Eid);

};

void Emp::deleteRec(int Eid) {

fstream file;

file.open(“Emp.dat”,ios::in|ios::out|ios::binary);

ofstream ofile(“temp.dat”);

while(file) {

file.read((char \*)this,sizeof(eobj));

if(this->Eno !=Eid)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_//statement1

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_//statement 2

rename(“temp.dat”,”emp.dat”);

}

(b) Write a function in c++ to count the words starting with letter ‘A’ present in FILE.TXT. 2

**(c)** Given a binary file PHONE.DAT, containing records of the following type. 3

class Phonlist{

char Name[20] ;

char Address[30] ;

char AreaCode[5] ;

char phoneNo[15] ;

**public :**

void Register();

void show();

int CheckCode(char AC[ ]) { {

return strcmp(Areacode, AC) ;

}

} ;

Write a function TRANSFER () in C++, that would copy all those records which are having AreaCode as “DEL” from PHONE.DAT to PHONBACK.DAT.

**Q5. Answer the following questions.**

(a) Define Candidate key and Foreign key. 2

(b) Consider the following tables Client and Bill. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii) 6

**Table : Client**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cust\_Id | Cust\_Name | Address | Phone\_no | City |
| C007 | Pritam Sharma | 12,M.G Road | 71274250 | Bangalore |
| C008 | Sutopa | 14/1 Pritam Pura | 41206819 | Delhi |
| C010 | Anurag Basu | 15A, Park Road | 61281921 | Kolkata |
| C012 | Hrithik | 7/2 Vasant Kunj | 26121949 | Delhi |
| C013 | Firoz Shah | 2, Servamali road | 25014192 | Bangalore |
| C025 | Vinod Nagpal | 46-a Navi Mumbai | 64104944 | Mumbai |
| C027 | Sameer | 41,Dwarka | 42101619 | Delhi |
| C002 | Pasunjit Bose | 16/A K.G Marg | 27220012 | Bangalore |
| C035 | Aamina Begum | 13/A Versova | 41612181 | Mumbai |

**Table: BILL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ord\_id** | **Cust\_id** | **Item** | **Ord\_date** | **Qty** | **Price** |
| 7002 | C007 | Pizza | 20-11-07 | 1 | 249.50 |
| 7003 | C013 | Garlic Bread | 24-10-05 | 3 | 75.75 |
| 7004 | C012 | Pasta | 03-03-07 | 4 | 173.00 |
| 7005 | C010 | Ice Cream | 01-01-08 | 30 | 195.75 |
| 7006 | C035 | Pizza | 02-03-06 | 4 | 249.50 |
| 7009 | C035 | Garlic Bread | 02-03-08 | 2 | 75.75 |
| 7010 | C013 | Brownie | 04-05-07 | 4 | 40.50 |
| 7011 | C014 | Ice Cream | 02-06-08 | 5 | 195.75 |
| 7012 | C002 | Pizza | 01-02-08 | 7 | 249.50 |

1. Display a report containing cust\_id, cust\_name, Item, qty, price and bill amount. Bill

amount is calculated as the sum of qty\*price.

1. Display how many customers have ordered Pizza in the month of March.
2. Count the number of customer who have ordered item worth more than 1700. Total amount = sum of qty\* price
3. Display the names of customer along with their city in alphabetical order of city
4. select Cust\_name , City, ord\_date from Client A, Bill b Where A.Cust\_id =b.Cust\_id;
5. select Cust\_name from Client where Cust\_id=( Select Cust\_id from Bill where Year(ord\_date) =2008)
6. select city, count(\*) from Client group by City;
7. select Distinct (Item) from Bill;

**Q6. Answer the following questions.**

1. State and verify De Morgan’s second theorem using Truth Table. 2
2. Draw the Logic Circuit for the following Boolean Expression: 2

W’X(Y’Z + X’Y) + YZ

c) Write the equivalent Canonical Sum of Product for the following Product of Sum 1  
 Expression: F(X,Y,Z)= ∏(1,2,6,7)

1. Reduce the following Boolean Expression using k-Map: 3

F(A,B,C,D)= (0,1,2,4,5,6,8,10)

**Q7 Answer the following questions.**

(a) Compare any two Switching techniques. 1

(b) Expand the following terms? 2

(i) WLL (ii) SGMA (iii) PPP (iv) FSF

(c) Differentiate between freeware and shareware. 1

(d) What is a Web Portal? Give one example. 1

(e) What is propriety software? Give one example? 1

(f) “Kanganalay Cosmetics” is planning to start their offices in four major cities in Uttar Pradesh to provide cosmetic product support in its retail fields. The company has planned to set up their offices in Lucknow at three different locations and have named them as “Head office”, “Sales office”, & “Prod office”. The company’s regional offices are located at Varanasi, Kanpur & Saharanpur. A rough layout of the same is as follows: 

An approximate distance between these offices as per network survey team is as follows:

|  |  |  |
| --- | --- | --- |
| **Place from** | **Place to** | **Distance** |
| Head office | Sales office | 15 KM |
| Head office | Prod office | 8 KM |
| Head office | Varanasi Office | 295 KM |
| Head office | Kanpur Office | 195 KM |
| Head office | Saharanpur office | 408 KM |

Number of computers:

|  |  |
| --- | --- |
| Head office | 156 |
| Sales office | 25 |
| Prod office | 56 |
| Varanasi Office | 85 |
| Kanpur Office | 107 |
| Saharanpur office | 105 |

1. Suggest the placement of the repeater with justification. 1
2. Name the branch where the server should be installed. Justify your answer. 1
3. Suggest the device to be procured by the company for connecting all the computers within each of its offices out of the following devices 1

* Modem
* Telephone
* Switch/Hub

iv) The company is planning to link its head office situated in Lucknow with the office at Saharanpur. Suggest an economic way to connect it; the company is ready to compromise on the speed of connectivity. Justify your answer. 1

**\*\*\*\*\*\*\*\*\*\*\*\*ALL THE BEST\*\*\*\*\*\*\*\*\*\*\***

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