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SET 1



INDIAN SCHOOL MUSCAT FIRST TERM EXAMINATION

COMPUTER SCIENCE

CLASS: XII

Sub. Code: 083

Time Allotted: 3 Hr

09.05.2018

Max. Marks: 70

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. Programming language is C++.

- 1 a. Out of the following, find those identifiers, which cannot be used for naming Variable, constants or Functions in a C++ program: 1
while, _SNO, cost*qty, long, Switch, Address One, school
- b. What is the purpose of actual and formal parameter in a C++ program. 2
- c. Give the difference between the type casting and type conversion. Give a suitable C++ code to illustrate both. 2
- d. Write the names of those header files, which are required to be included in the code for successful compilation: 2
void main()
{
float A, Number, Outcome;
A=random(5);
cin>>Number;
if (isalnum(A))
cout<<Number*10;
Outcome=pow(A,Number);
cout<<Outcome<<endl;
}
- e. Write a user defined function COUNT which takes a string and returns the count of number of words ending with the character 'g' in the string. 2
- f. Write a user defined function salaryfix(float Pay[], int N) in C++, which should modify each element of the array Pay having N elements, as per the following rules: 3

Existing Value of Pay	Pay to be changed to
less than 100000	Add 25% in the existing value
>=100000 and <200000	Add 20% in the existing value
>=200000	Add 15% in the existing value

- 2 a. Predict the output of the following C++ program code. Assume all required header files are already included in the program 2
- ```

void ChangeArray(int Number, int ARR[], int Size)
{
for (int L =0; L<Size; L++)
if(L<Number)
ARR[L]+=L;
else
ARR[L]*=L;
}

void Show (int ARR [], int Size)
{ int i;
for (int L=0; L<Size; L++)
(L%2!=0) ?cout<<ARR[L] <<"\t": cout<<ARR[L]<<"\t" ;
cin>>i;
}

void main ()
{
int Array [] = {2,4,6,3,1,7};
ChangeArray(2, Array, 6) ;
Show (Array, 6) ;
}

```
- b. Predict the output of the following C++ program code. Assume all required header files are already included in the program 3
- ```

typedef char STRING[80];
void MIXITNOW(STRING S)
{
int Size=strlen(S);
for(int I=0;I<Size-1;I+=2)
{ char WS=S[I];
S[I]=S[I+1];
S[I+1]=WS;
}
for(int I=1;I<Size;I++)
if(S[I]>='O' && S[I]<'S')
S[I]='@';
}

void main()
{

```

```

STRING Word="TOYOTA PIRUS";
MIXITNOW(Word);
cout<<Word<<endl;
getch();
}

```

- c. Predict the output of the following C++ program code. Assume all required header files are already included in the program 3

```

#include<iostream.h>
struct sal
{ int basic, Bonus;};
void calculate(sal &g, int N=10)
{
g.basic++;
g.Bonus=g.basic+N;
}
void main()
{
sal G={ 150,10};
calculate(G,5);
cout<<G.basic<<":"<<G.Bonus<<endl;
calculate(G);
cout<<G.basic<<":"<<G.Bonus<<endl;
calculate(G,15);
cout<<G.basic<<":"<<G.Bonus<<endl;
}

```

- d. How are encapsulation and abstraction inter-related? Give eg 2
- e. Define the following terms : (i) Polymorphism (ii) Inheritance (iii) Abstract class 1x3
- 3 a. Write the difference between function overloading and function with default arguments 2
- b. Predict the output of the following C++ program code. Assume all required header files are already included in the program 3
- ```

#include<iostream.h>
int compute(int s)
{ return(s*s); }
float compute(int b,int h)
{ return(0.5 * b * h); }
void main()
{ cout<<compute(4)<<endl;
 cout<<compute(compute(3),4)<<endl;
 cout<<compute(4,3)<<endl;
}

```
- c. Differentiate between the members which are present within the private visibility mode with those which are present within the public visibility modes. 2
- c. Write any two functions of scope resolution operator. 2

- d. Rewrite the following program after removing the syntactical error(s), if any. Underline each correction assume all required header files are included 3

Class Novel

```
{ int NO;
 char name;
 float price=100;
 public :
 void Input()
 { cin>>NO;
 gets(name);
 cin>>price;
 }
 void print();
};
void print:: Novel()
{ cout<<NO<<"\t"<<name<<"\t"<<price;
}
void main()
{
 Novel sale;
 Novel.Input();
 print();
}
```

- e. Write the output of the following C++ program code. Assume all required header files are already included in the program. 3

```
class Stock
{
 long int ID;
 float Rate;
 int Date;
 public:
 Stock(){ID=1001;Rate=200;Date=1;}
 void RegCode(long int I,float R)
 {
 ID=I;
 Rate=R;
 }
 void Change(int New,int DT)
 {
 Rate+=New;
 Date=DT;
 }
 void Show()
 {
 cout<<"Date : "<<Date<<endl;
 cout<<ID<<"#"<<Rate<<endl;
 }
};
void main()
{
```

```

Stock A,B,C;
A.RegCode(1024,150);
B.RegCode(2015,300);
B.Change(100,29);
C.Change(-20,20);
A.Show();
B.Show();
C.Show();
}

```

4 a. Define a class Applicant in C++ with following description:

4

**Private Members**

- A data member ANo (Admission Number) of type long
- A data member Name of type string
- A data member Agg (Aggregate Marks) of type float
- A data member Grade of type char
- A member function GradeMe() to find the grade as per the aggregate marks obtained by a student. Equivalent aggregate marks range and the respective grades are :

| Aggregate Marks       | Grade |
|-----------------------|-------|
| >=80                  | A     |
| less than 80 and >=65 | B     |
| less than 65 and >=50 | C     |
| less than 50          | D     |

**Public Members**

- A function ENTER() to allow user to enter values for ANo, Name, Agg and call function GradeMe() to find the Grade.
- A function RESULT() to allow user to view the content of all data members.

b. Define a class council in C++ with following description :

4

**Private members :**

- name of type string
- housename of type string
- votes\_received as integer
- Elected as char

A function incouncil( ) to assign Elected as 'Y' if the votes\_received is more than the 250 else 'N'.

**Public members :**

A constructor to initialize name as NULL, housename as "BLUE".

A destructor to destruct council class object.

A function readdetails( ) to input name, housename and votes\_received .

A function showdetails( ) to evoke the function incouncil() and display all the data members details..

c. What is copy constructor. Give a suitable example.

2

d. Write the difference between default constructor and parameterized constructor.

2

e. Answer the questions (i) and (ii) after going through the following class :

3

```

class Exam{
 int Marks;
 char Subject[20];
}

```

```

public:
 Exam () //Function 1
 {
 Marks = 0;
 strcpy (Subject,"Computer");
 }
 Exam(char S[]) //Function 2
 {
 Marks = 0;
 strcpy(Subject,S);
 }
 Exam(int M) //Function 3
 {
 Marks = M;
 strcpy(Subject,"Computer");
 }
 Exam(char S[], int M) //Function 4
 {
 Marks = M;
 strcpy (Subject,S);
 }
 ~ Exam() //Function 5
 {cout<< ,"\\n Ending of Destructor ";
 }
};

```

- (i) Write statements in C++ that would execute Function 3 and Function 4 of class Exam.
- (ii) Which feature of Object Oriented Programming is demonstrated using Function 1, Function 2, Function 3 and Function 4 in the above class Exam?
- (iii) What is the purpose of Function 5 and when is it executed?

f. Write any two uses of Inheritance. Give an example for Multilevel inheritance. 2

5 a. 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 : protected CUSTOMER , public SALESMAN

```

{ char Voucher_No[10];
 char Sales_Date[8];
public:
SHOP();
void Sales_Entry();
void Sales_Detail();
};

```

};

(i) Write the names of data members which are accessible from objects belonging to class CUSTOMER.

(ii) Write the names of all the member functions which are accessible from objects belonging to class SALESMAN.

(iii) Write the names of all the members which are accessible from member functions of class SHOP.

(iv) How many bytes will be required by an object belonging to class SHOP?

b. Answer the questions (i) to (iv) based on the following code :

4

```
class DRUG
```

```
{ char catg[10];
```

```
char DOF[10], comp[20];
```

```
public:
```

```
DRUG();
```

```
void endrug();
```

```
void showdrug();
```

```
};
```

```
class TABLET
```

```
{
```

```
protected:
```

```
char tname[30], volabel[20];
```

```
public:
```

```
TABLET();
```

```
void entab();
```

```
void showtab();
```

```
};
```

```
class PAINKILLER : protected DRUG , public TABLET
```

```
{
```

```
int dose, usedays;
```

```
long double price;
```

```
char seffect[20];
```

```
public :
```

```
void entpain();
```

```
void showpain();
```

```
};
```

i) How many bytes will be required by an object of PAINKILLER

ii) Write names of all the member functions of class PAINKILLER.

iii) Write names of all members accessible from object of class PAINKILLER.

iv) Write names of all data members accessible from functions of class PAINKILLER.

c. Answer the following :

3

(i) What is a stream?

(ii) What are the methods of opening files?

(iii) How will you detect end of file?

d. Write any two differences between ifstream and ofstream class.

2

**END OF THE QUESTION PAPER**