



Q1

Total Marks 10-12

Q1(A) Theory Question

Marks :2

1. Differentiate between a Run Time Error and Syntax Error with suitable examples of each in C++.
2. Write two major difference between Object Oriented Programming and Procedural Programming?
3. Why main function is special? Give two reasons
4. Write two advantages of using include compiler directive?
5. Illustrate the concept of function overloading with the help of an example.
6. Encapsulation is one of the major properties of OOP. How is it implemented in C++?
7. Reusability of classes is one of the major properties of OOP. How it is implemented in C++?
8. illustrates the concept of inheritance with the help of an example?
9. What is the difference between call by value and call by reference? Give an example in C++ to illustrate the same
10. What is the difference between Local Variable and Global Variable? Also, give a suitable C++ code to illustrate same.
11. What is inheritance? Give an example in C++ to show its implementation in C++
12. What is polymorphism ? Give an example in C++ to show its implementation in C++.
13. between a default constructor and copy constructor, using suitable examples of each
14. What are the advantages of Object Oriented Programming over Procedural Programming?
15. What is the difference between #define and const? Explain with suitable example.
16. What is the difference between type casting and automatic type conversion? Explain with suitable example.
17. What is the purpose of using a typedef command in C++. Explain with suitable example.
18. What is the difference between Actual Parameter and Formal Parameter? Give an example in C++ to illustrate both types of parameters.
19. What is the difference between automatic type conversion and type casting? Also, give a suitable C++ code to illustrate both.
20. What is the difference between Object Oriented Programming and Procedural Programming?
21. Differentiate between the post-increment and pre-increment operators. Also, give suitable C++ code to illustrate both.
22. Find the correct identifiers out of the following, which can be used for naming Variable, Constants or Functions in a C++ : **For, while, INT, NeW, delete, 1stName, Add+Subtract, name1**
23. Out of the following, find those identifiers, which cannot be used for naming Variable, Constants or Functions in a C++ : **_Cost, Price*Qty, float, Switch, Address One, Delete, Number12, do**

Q 1(B) Based Header File

Marks 1-2

1. Name the header file, to which following built-in function belong to:

- | | | | |
|--------------|---------------|-----------------|----------------|
| a) cos() | (ii) setw() | (iii) toupper() | (iv) strcpy() |
| b) strcat () | (ii) scanf () | (iii) getchar() | (iv) clrscr () |
| c) isupper() | (ii) setw() | (iii) exp() | (iv) strcmp() |
| d) toupper() | ii) printf | | |
| e) write() | (ii) arc | (iii) open() | (iv) strlen() |
| f) gets() | (ii) strcmp() | (iii) abs() | (iv) isalnum() |
| g) puts() | (ii) sin() | | |

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

<pre>void main() { char Text[40]; strcpy(Text, "AISSCE"); puts(Text); }</pre>	<pre>void main () { char String [] = "Peace"; cout<<setw (20) << String; }</pre>	<pre>void main () { char Word [] ="Exam"; cout<<setw(20)<<Word; }</pre>
<pre>void main() { int Eno=123, char Ename[]="Rehan Swamp"; cout<<setw(5)<<Eno<<setw(25)<<EName <<endl; }</pre>	<pre>void main() { int Rno=24; char Name[] ="Amen Singhania"; cout<<setw(10)<<Rno<<setw(20)<<Name<<endl; }</pre>	
<pre>void main () { char C, String [] = "Excellence Overload"; for (int l=0; String [l] != '\0'; l ++) if (String [l] == ' ') cout<<endl; else { C=toupper(String[l]); cout<<C ; } }</pre>	<pre>void main () { char CH,Text[] ="+ve Attitude"; for (int l=0 ; Text[l] !='\0' ;l++) if (Text[l]== ' ') cout<<endl; else { CH=toupper (Text [l]) ; cout<<CH; } }</pre>	
<pre>void main() { char Msg[]="Sunset Gardens"; for (int l=5;l<strlen(Msg);l++) puts(Msg); }</pre>		

Q1(C) Syntax Error finding and correcting code

Marks 2-3

1(c) Find the syntax error, if any, in the following program	
<pre>#include <iostream.h> void main() { int R;W = 90; while W > 60 { R = W- 50; switch(W) { 20:cout << "Lower Range"<<endl; 30:cout<< "Middle Range"<< endl; 40: cout<< "Higher Range"<<endl; } } }</pre>	<pre># include <iostream.h> main() { int x[5], *y,z[5]: for (i = 0; i < 5; i++) { x[i]=l; z[i] = i+3; y = z; x = y; } }</pre>
<pre>#include<stdio.h> void main () { int s1, s2, num; s1 = s2 = 0; for (x = 0; x<11; x++) { cin << num; if (num>0) s1 += num; else s2 = /num; } cout << s1 << s2; }</pre>	<pre>class ABC { int x = 10; float y; ABC () { y = 5;} ~ ABC(){ } }; void main () { ABC al,a2; }</pre>
<pre>void main() { int x; cin<< x; for(int y = 0; y<10; y++); cout>>x + y; }</pre>	<pre>#include <iostream.h> const int Size 5; void main() { int Array[Size]; Array = {50,40,30,20,10}; for(Ctr=0; Ctr<Size; Ctr++) cout>>Array[Ctr]; }</pre>

Rewrite the following program after removing the syntactical error(s) if any. Underline each correction.

```
#include <iostream.h>
structure Supergym
{
int member number;
char membername[20];
char membertype[] = "HIG";
};
void main()
{
Supergym person1, person.2;
cin<<"Member Number:";
cin>>person1.membernumber;
cout<<"Member Name :";
cin>>person1.membername;
person1.member type = "MIG";
person2 = person1;
cin<<"Member
Number:"<<person2.membernumber;
cin<<"Member Name"<<person2.membername;
cin<<"Member Number:"<<person2.membertype;
}
```

```
void main( )
{
struct STUDENT
{
char stu_name[20];
char stu_sex;
int stu_age=17;
} student;
gets(stu_name);
gets(stu_sex);
}
```

```
#include [iostream.h]
#include [stdio.h]
class Employee
{
int Empld = 901;
char EName [20] ;
public
Employee ( ) { }
void Joining ( ) {cin>>Empld; gets (EName);}
void List ( ) {cout<<Empld<<" : "<<EName<<endl;}
};

void main ( )
{
Employee E ;
Joining.E ( ) ;
E. List ( )
}
```

```
include <iostream.h>
include <stdio.h>
class MyStudent
{
int StudentId = 1001;
char Name [20] ;
public
MyStudent( ){}
void Register ( ) {cin>>StudentId; gets (Name) ;}
void Display ( ) {cout<<StudentId<<" : "
<<Name<<endl;}
};
void main ( )
{
MyStudent MS ;
Register.MS( ) ;
MS.Display( ) ;
}
```

```
include <iostream.h>
class TRAIN
{
long TrainNo;
char Description[25];
public
void Entry ( )
{
cin >>TrainNo; gets(Description);
}
Void Display ( )
{
cout<<TrainNo<<" : "<<Description<<endl; }
};
void main( )
{
TRAIN T;
Entry. T( ); Display. T( );}
```

<pre>#include [iostream.h] #include [stdio.h] class Employee { int Empld = 901; char EName [20] ; public Employee () { } void Joining () {cin>>Empld; gets (EName);} void List () {cout<<Empld<<" : "<<EName<<endl;} }; void main () { Employee E ; Joining.E () ; E. List () }</pre>	<pre>include <iostream.h> include <stdio.h> class MyStudent { int StudentId = 1001; char Name [20] ; public MyStudent(){ } void Register () {cin>>StudentId; gets (Name) ;} void Display () {cout<<StudentId<<" <<Name<<endl;} }; void main () { MyStudent MS ; Register.MS() ; MS.Display() ; }</pre>
<pre>include <iostream.h> class TRAIN { long TrainNo; char Description[25]; public void Entry () { cin >>TrainNo; gets(Description); } Void Display () { cout<<TrainNo<<":"<<Description<<endl; } }; void main() { TRAIN T; Entry. T(); Display. T(); }</pre>	<pre>include <iostream.h> class FLIGHT { long FlightCode; char Description[25]; public void AddInfo() { cin>>FlightCode; gets (Description) ; } void ShowInfo() (cout<<FlightCode<<":"<<Description<<endl; } }; void main() { FLIGHT F; AddInfo.F(); ShowInfo.F(); }</pre>
<pre>#include[iostream.h] typedef char Text(80) ; void main () { Text T= "Indian"; int Count=strlen(T) ; cout<<T<<'has'<<Count<<'characters' <<endl; }</pre>	<pre>include<iostream.h> typedef char [80] String; void main () { String S= "Peace"; int L=strlen(S) ; cout<<S<<'has'<<L<<'characters'<<endl; }</pre>

<pre>#include <iostream.h> struct Pixels { int Color,Style;} void ShowPoint(Pixels P) { cout<<P.Color,P.Style<<endl; } void main() { Pixels Point1=(5,3); ShowPoint(Point1); Pixels Point2=Point1; Color.Point1+=2; ShowPoint(Point2); }</pre>	<pre>#include [iostream.h] class MEMBER { int Mno;float Fees; PUBLIC: void Register(){cin>>Mno>>Fees;} void Display{cout<<Mno<<" : "<<Fees<<endl;} }; void main() { MEMBER M; Register(); M.Display(); }</pre>
<pre>#include <iostream.h> struct Pixels { int Color,Style;} void ShowPoint(Pixels P) { cout<<P.Color,P.Style<<endl; } void main() { Pixels Point1=(5,3); ShowPoint(Point1); Pixels Point2=Point1; Color.Point1+=2; ShowPoint(Point2); }</pre>	

Q1(d) Output Based Questions (2 -3 question)**Marks 6-7****1 based on random/ 1 based on class/structure 1 /pointer/string****Find the output of the following program. Assume all required header files are already being included in the program.**

<pre>void Position(int &C1, int C2 = 3) { C1 += 2; C2 += 1; } int main() { int P1 = 20, P2 = 4; Position(P1); cout << P1 << ", " << P2 << endl; Position(P2, P1); cout << P1 << ", " << P2 << endl; }</pre>	<pre>void Withdef(int HisNum = 30) { for (int I = 20; I <= HisNum; I += 5) cout << I << " "; cout << endl; } void Control(int &MyNum) { MyNum += 10; Withdef(MyNum); } int main() { int YourNum = 20; Control(YourNum); Withdef(); cout << "Number = " << YourNum << endl; }</pre>
<pre>void Encode(char Info[], int N); int main() { char Memo[] = "Justnow"; Encode(Memo, 2); cout << Memo << endl; } void Encode(char Info[], int N) { for (int I = 0; Info[I] != '\0'; I++) if (I % 2 == 0) Info[I] = Info[I] - N; else if (islower(Info[I])) Info[I] = toupper(Info[I]); else Info[I] = Info[I] + N; }</pre>	<pre>void Changelnt(char Text[], char C) { for (int K = 0; Text[K] != '\0'; K++) { if (Text[K] >= 'F' && Text[K] <= 'L') Text[K] = tolower(Text[K]); else if (Text[K] == 'E' Text[K] == 'e') Text[K] = C; else if (K % 2 == 0) Text[K] = toupper(Text[K]); else Text[K] = Text[K - 1]; } } int main() { char oldText[] = "pOwERALone"; Changelnt(oldText, '%'); cout << "New TEXT:" << oldText << endl; }</pre>
<pre>void Convert(char Str[], int Len) { for (int Count = 0; Count < Len; Count++) { if (isupper(Str[Count])) Str[Count] = tolower(Str[Count]); else if (islower(Str[Count])) Str[Count] = toupper(Str[Count]); else if (isdigit(Str[Count])) Str[Count] = Str[Count] + 1; else Str[Count] = '*'; } }</pre>	<pre>struct POINT { int X, Y, Z; }; void StepIn(POINT &P, int Step = 1) { P.X += Step; P.Y -= Step; P.Z += Step; } void StepOut(POINT &P, int Step = 1) { P.X -= Step; P.Y += Step; P.Z -= Step; }</pre>

<pre>int main() { char Text[] = "CBSE Exam 2005"; int Size = strlen(Text); Convert(Text, Size); cout << Text << endl; for (int C = 0, R = Size - 1; C < Size / 2; C++, R--) { char Temp = Text[C]; Text[C] = Text[R]; Text[R] = Temp; } cout << Text << endl; }</pre>	<pre>int main() { POINT P1 = {15, 25, 5}, P2 = {10, 30, 20}; StepIn(P1); StepOut(P2, 4); cout << P1.X << ", " << P1.Y << ", " << P1.Z << endl; cout << P2.X << ", " << P2.Y << ", " << P2.Z << endl; StepIn(P2, 12); cout << P2.X << ", " << P2.Y << ", " << P2.Z << endl; }</pre>
<pre>struct MyBox { int Length, Breadth, Height; }; void Dimension(MyBox M) { cout << M.Length << "x" << M.Breadth << "x"; cout << M.Height << endl; } int main() { MyBox B1 = {10, 15, 5}, B2, B3; ++B1.Height; Dimension(B1); B3 = B1; ++B3.Length; B3.Breadth++; Dimension(B3); B2 = B3; B2.Height += 5; B2.Length--; Dimension(B2); }</pre>	<pre>class Aroundus { int Place, Humidity, Temp; public: Aroundus(int P = 2) { Place = P; Humidity = 60; Temp = 20; } void Hot (int T) { Temp += T; } void Humid(int H) { Humidity += H; } void JustSee() { cout << Place << ":" << Temp << "&" << Humidity << "%" << endl; } }; int main() { Aroundus A, B(5); A.Hot(10); A.JustSee(); B.Humid(15); B.Hot(2); B.JustSee(); A.Humid(5); A.JustSee(); }</pre>
<pre>class Calc { char Grade; int Bonus; public: Calc() { Grade = 'E'; Bonus = 0; } void Down(int G) { Grade -= G; } void Up(int G) { Grade += G; Bonus++; } void Show() { cout << Grade << "#" << Bonus << endl; } }; int main() { Calc C;</pre>	<pre>class METRO { int Mno, TripNo, PassengerCount; public: METRO(int Tmno = 1) { Mno = Tmno; TripNo = 0; PassengerCount = 0; } { TripNo++; PassengerCount += PC; } void StatusShow() { cout << Mno << ":" << TripNo << ":" << PassengerCount << endl; } }; int main() { METRO M(5), T;</pre>

<pre> C.Down(2); C.Show(); C.Up(7); C.Show(); C.Down(2); C.Show(); } </pre>	<pre> M.Trip(); T.Trip(50); M.StatusShow(); M.Trip(30); T.StatusShow(); M.StatusShow(); } </pre>
<pre> int main() { int X[] = { 10, 25, 30, 55, 110 }; int *p = X; while (*p < 110) { if (*p % 3 != 0) *p = *p + 1; else *p = *p + 2; p++; } for (int l = 4; l >= 1; l--) { cout << X[l] << " "; if (l % 3 == 0) cout << endl; } cout << X[0] * 3 << endl; } </pre>	<pre> int main() { int Array[] = { 4, 6, 10, 12 }; int *pointer = Array; int l; for (l = 1; l <= 3; l++) { cout << *pointer << "#"; pointer++; } cout << endl; for (l = 1; l <= 4; l++) { (*pointer) *= 3; --pointer; } for (l = 1; l < 5; l++) cout << Array[l - 1] << "@ "; cout << endl; } </pre>
<pre> { char *NAME = "IntRAneT"; for (int x = 0; x<strlen(NAME);x++) if(islower(NAME[x])) NAME[x]=toupper(NAME[x]); else if (isupper(NAME[x])) if (x%2==0) NAME[x]=tolower(NAME[x]); else NAME [x] = NAME[x - 1]; puts(NAME); } </pre>	<pre> void main() { char *NAME = "a ProFile"; for (int x=0;x<strlen(NAME);x++) if (islower(NAME[x]) NAME [x] = toupper(NAME)[x]; else if (isupper(NAME[x]) if (x%2!=0) NAME [x]=tolower(NAME[x-1]); else NAME [x]--; cout << NAME << endl; } </pre>
<pre> int main() { char *String = "SHAKTI"; int *Point, Value[] = {10,15,70,19}; Point = Value; cout << *Point << String << endl; String++; Point++; cout << *Point << String << endl; } </pre>	<pre> int main() { int Track[] = { 10, 20, 30, 40}, *Striker; Striker = Track; Track[1] += 30; cout << "Striker > " << *Striker << endl; *Striker -= 10; Striker++; cout << "Next@" << *Striker << endl; Striker += 2; cout << "Last@" << *Striker << endl; cout << "Reset To " << Track[0] << endl; } </pre>

<pre>void ChangeString(char Text[], int &Counter) { char *Ptr = Text; int Length = strlen(Text); for (; Counter < Length - 2; Counter += 2, Ptr++) { *(Ptr + Counter) = toupper(*(Ptr + Counter)); } } int main() { int Position = 0; char Message[] = "Pointers Fun"; ChangeString(Message, Position); cout << Message << "@" << Position; } }</pre>	<pre>typedef char Str80[80]; int main() { char *Notes; Str80 Str = "vR2GooD"; int L = 6; Notes = Str; while(L >= 3) { Str[L] = (isupper(Str[L])? tolower(Str[L]): toupper(Str[L])); cout << Notes << endl; L--; Notes++; } }</pre>
<pre>int main() { randomize(); int Points; Points = 100 + random(LIMIT); for (int P = Points; P >= 100; P--) cout << P << "#"; cout << endl; } (i) 103#102#101#100# (ii) 100#101#102#103# (iii) 100#101#102#103#104# (iv) 104#103#102#101#100#</pre>	<pre>int main() { randomize(); int Marks[] = { 99, 92, 94, 96, 93, 95 }, MyMarks; MyMarks = Marks[1 + random(2)]; cout << MyMarks << endl; } (i) 99 (ii) 94 (iii) 96 (iv) None of the above</pre>
<p>Go through the C++ code shown below, and find out the possible output or output from the suggested output options (i) to(iv). Also, write the least value and highest value, which can be assigned to the variable guess. Assume all required header files are already being included in the program.</p> <pre>int main() { randomize(); int Guess, High = 4; Guess = random(High) + 50; for (int C = Guess; C <= 55; C++) cout << C << "#"; } (i) 50 # 51 # 52 # 53 # 54 # 55 # (ii) 52 # 53 # 54 # 55 # (iii) 53 # 54 # (iv) 51 # 52 # 53 # 54 # 55</pre>	<p>Observe the following program SCORE.CPP carefully, if the value of Num entered by the user is 5, choose the correct possible output(s) from the options from (i) to (iv), and justify your option. Assume all required header files are already being included in the program.</p> <pre>//program : SCORE.CPP int main() { randomize(); int Num, Rndnum; cin >> Num; Rndnum = random(Num) + 5; for (int N = 1; N <= Rndnum; N++) cout << N << "#"; } Output Options: (i) 1 2 3 4 (ii) 1 2 (iii) 1 2 3 4 5 6 7 8 9 (iv) 1 2 3</pre>

```
int main()
{
    randomize();
    int NUM;
    NUM = random(3) + 2;
    char TEXT[] = "ABCDEFGHGIJK";
    for (int I = 1; I <= NUM; I++)
    {
        for (int J = NUM; J <= 7; J++)
            cout << TEXT[J];
        cout << endl;
    }
}
```

i) FGHI ii) BCDEFGH iii) EFGH iv) CDEFGH
 FGHI BCDEFGH EFGH CDEFGH
 FGHI EFGH
 FGHI EFGH

Based on the following C++ code, find out the expected correct output(s) from the options (i) to (iv). Also, find out the minimum and the maximum value that can be assigned to the variable Trick used in the code at the time when value of Count is: 3. Assume all required header files are already being included in the program.

```
int main()
{
    char Status[][10] = {"EXCEL", "GOOD", "OK"};
    int Turn = 10, Trick;
    for(int Count = 1; Count < 4; Count++)
    {
        Trick = random(Count);
        cout << Turn - Trick << Status[Trick] << "#";
    }
}
```

(i) 10EXCEL#10EXCEL#8OK#
 (ii) 10EXCEL#8OK#9GOOD#
 (iii) 10EXCEL#9GOOD#10EXCEL#
 (iv) 10EXCEL#10GOOD#8OK#

```
#include <iostream.h>
#include <stdlib.h>
void main()
{
    int Guess;
    randomize();
    cin>>Guess;
    for (int I=1;I<=4;I++)
    { New=Guess+random(I);
      cout<<(char)New; }
```

(i) ABBC
 (ii) ACBA
 (iii) BCDA
 (iv) CABD

The following code is from a game, which generates a set of 4 random numbers. Praful is playing this game, help him 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 he wins the game. Justify your answer. 2

```
#include <iostream.h>
#include <stdlib.h>
const int LOW=25;
void main ()
{
    randomize();
    int P01NT=5,Number;
    for (int I=1;I<=4;I++)
    {
        Number=LOW+random(POINT);
        Cout<<Number<<“.”;
        POINT--;
    }
}
```

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