Q1: Write down a program which takes the values of variable 'a' and 'b' as input and evaluate the following equation:

$x = a^2 + 2ab + b^2$

Display the result of 'x'

Hint: a2 = a x a

Q2: Write down a program which takes the temperature in Celsius °C from user and displays the output in Fahrenheit °F

$°F = (°C \times 9/5) + 32$

Q3: Attempt any Seven (7) Questions (2 Marks each):

A. Declare the constant "PI = 3.14" by using two different methods.
B. Write any three rules for defining variable names.
C. Write the code to print the series (1, 4, 9, 16, 25, 36, 49, 64, 81, 100) by using for loop.
D. Define the term variable.
E. Write name of the header files to which the following belong: setw(), pow( ), getch(), sqrt() and clrscr()
F. Write code to create a (c-string) character array "Name" and store your name in that array.
G. Write code to create a structure names "Weather" with any three data members (variables) of your choice.
H. Write a function prototype which returns a float value and takes three arguments of long datatype.
I. Write symbols and names of 6 relational operators.
J. Declare a two Dimensional array of float data type with 3 rows and 2 columns, with any set of values.

Q4: A. Write C++ statements to accomplish each of the following tasks. (6 Marks)

i. Declare variables 'a' and 'b' to be of type 'float'.
ii. Declare and initialize variable 'average' to be of type 'double with value 0'.
iii. Set variable 'a' to '1234.234'.
iv. Set variable 'b' to " 1.3×10^3 ".
v. Add variable 'a' and 'b' and divide their sum by 2 and assign the result to variable 'average'.
vi. Print "The average is: " followed by the value of variable 'average'.

B. Find the syntax error in following code and re-write the code after correction. (6 Marks)

```
#include <isotream>
use name space std;
Int mean() {
Int age; height;
count << Enter age of candidate:  cin << age;
count << Enter height of candidate in cm:  cin << height;
if ( age >= '18' and height >= '160' )
count << The candidate is selected :
Else
count << Sorry! The candidate is not selected :
Return 0;
}
```

Q5: Briefly differentiate any FOUR the following terms: (3 Marks each)

A. Signed and Unsigned Data types
B. Pre-define functions and user-define functions
C. Variable visibility and Variable Life time
D. while and do-while loop
E. Local Variable and Global Variable

Q6: A. Identify the use of the following symbols in C++, and explain where these symbols are used: (5 Marks)

i. : ii. ; iii. // iv. ' ' v. \

B. Give output of the following code: (2 Marks)

```
for (int i = 200 ; i >= 0 ; i-=10);
cout<<i;
```

C. Write a program which take one alphabet as an input from user and checks whether the alphabet is vowel or consonant by using switch statement OR if else statement (5 Marks)

Q7: A. What is function? Give any two advantages of dividing a program into functions. (6 Marks)

B. Write a function called interchange() that takes two int values as arguments by reference and exchanges the values of int variable with each other. Use the function in main() and display results. (6 Marks)

Q8: A. Explain the keywords 'break' and 'continue' and Write an example program for any ONE of them. (6 Marks)

B. Give output of the following code (There is no error in program) : (3 Marks)

```
int number = -50 , answer = -1;
if(  ( number>100 && number<0 )  ||  number<100 )   answer = 1;
else     answer = 0;        cout<<"answer is "<<answer;
```

C. Give output of the following code (There is no error in program) : (3 Marks)

```
for(int j=0; j<10; j++)
cout<< ((j%2==0) ? 'o' : 'x');
```

Q1. A. Write C++ statements to accomplish each of the following tasks.

i. **Declare variables 'x' and 'y' to be of type 'int'.**
ii. **Declare variable 'sum' to be of type 'long'.**
iii. **Set variable 'x' to '100'.**
iv. **Set variable 'y' to '200'.**
v. **Set variable 'sum' to '0'.**
vi. **Add variable 'x' to variable 'y' and assign the result to variable 'sum'.**
vii. **Print "The sum is: " followed by the value of variable 'sum'.**

B. Find the syntax error in following code and re-write the code after correction.

```
#include (iostream)
Using Name Space  std;
Int mean();
{
floate rad;
CONST floate PI = 3.14159F;
cout << "Enter radius of circle: " >>;
cin << rad;
floate area = PI x rad x rad;
cout << "Area is " >> area;
getch[];
}
```

Q2. What will be the output of the following code?

A.

```
int main()  {
int a, b=7, c=5;
if (b++ > 7)
a = ++b + c++;
else
a = ++b - c++;
cout <<a<<b<<c;
return 0;  }
```

B.

```
int main()
{
int i;
for (i=10;i>=0;i--
);
cout<<i;
return 0;
}
```

C.

```
int main()  {
int x, y, total = 0;
for(x=1 ; x<=5 ; x++){
y = x * x;
cout << y << endl;
total += y; }
cout <<"Total is:"<<total<<
endl;
return 0;  }
```

Q3. Briefly differentiate the following terms:

A. Signed and Unsigned Data types **B.** Pre-define functions and user-define functions

C. == Operator and = Operator

Q4. A. Identify the use of the following symbols in C++, and explain where these symbols are used:

i. { } **ii. ;** **iii. //** **iv. " "**

B. Explain the 6 relational operators and 3 logical operators

Q5. **A.** Write a program that asks the user to enter two numbers, obtains the two numbers from the user and prints the sum, product, difference, quotient and remainder of the two numbers.

B. Write down the syntax of declaring the following:

i. **A single dimensional array of float data type with 10 elements**
ii. **A double dimensional array of char data type with 4 rows and 5 columns.**

Q6. **A.** Why the program should be divided into functions? Give any two advantages of dividing a program into functions.

B. Define variable visibility and variable lifetime. Also discuss internal (local) and external (global) variables.

Q7. Name only the header files to which the following belong:

a. setw() **b.** pow( ) **c.** getch() **d.** sqrt() **e.** clrscr()

Q8. Briefly differentiate any TWO of the following terms:

a. Signed and Unsigned Data types **b.** Pre-define functions and user-define functions
c. == Operator and = Operator

Q9. Explain the 6 relational operators and 3 logical operators

Q10. Discuss the use of variables in the C++ program and why do we specify the data type of all variables?

Q11. What is complier and what role does it plays in C++? Draw a diagram to explain the step of compilation

Q12. Write a program that asks the user to enter two numbers, obtains the two numbers from the user and prints the sum, product, difference, quotient and remainder of the two numbers.

Q13. Write down the syntax of declaring the following:

a. **A single dimensional array of float data type with 10 elements**
b. **A double dimensional array of char data type with 4 rows and 5 columns.**

Q14. Write C++ statements to accomplish each of the following tasks.

a. **Declare variables 'sum' and 'x' to be of type 'int'.**
b. **Set variable 'x' to '1'.**
c. **Set variable 'sum' to '0'.**
d. **Add variable 'x' to variable 'sum' and assign the result to variable 'sum'.**
e. **Print "The sum is: " followed by the value of variable 'sum'.**

Q15. Find the syntax error in following code and re-write the code after correction

```
#include (iostream.h)
#include (conio.h)
mean();
{
clrscr();
floate rad;
CONST floate PI = 3.14159F;
cout << "Enter radius of circle: " >>;
cin << rad;
floate area = PI x rad x rad;
cout << "Area is " >> area;
getch[];
}
```

Q16. Why the program should be divided into functions? Give any two advantages of dividing a program into functions.

Q17. Define the three types of loops in C++.

Q18. Differentiate between if else statement and switch statement.

Q19. Define variable visibility and variable lifetime. Also discuss internal (local) and external (global) variables.

Q20. Give the concept of cin and cout and what is their use in program.

Q21. Give output of the following code:

```
void main(void)
{
int number = -50 , answer = -1;
if(  ( number<100 && number>0 )  ||  number>100 )
  answer = 1;
else
  answer = 0;
cout<<"answer is "<<answer;
}
```

Q22. Write any program which demonstrate any 4 escape sequences

Q23. Write any program which demonstrate arithmetic assignment operators " += –= *= /= %= "

Q24. Write any program which demonstrate arithmetic operator " + – * / % "

Q25. Write any program which demonstrate cin and cout

Q26. Write any program which demonstrate data types char, short and double

Q27. Write any program which demonstrate data types int, float and long

Q28. Write any program which demonstrate do-while loop

Q29. Write any program which demonstrate for loop

Q30. Write any program which demonstrate if – else statement

Q31. Write any program which demonstrate nested loops

Q32. Write any program which demonstrate pow() function

Q33. Write any program which demonstrate prefix and postfix increment and decrement operator

Q34. Write any program which demonstrate setw() manipulator

Q35. Write any program which demonstrate sqrt() function

Q36. Write any program which demonstrate switch statement

Q37. Write any program which demonstrate ternary conditional operator " ? : "

Q38. Write any program which demonstrate while loop

Q39. Write a function named "swap_floats" that takes two floating point arguments and interchanges the values that are stored in those arguments. The function should return no value. To take an example, if the following code fragment is executed

```
float x = 5.8, y = 0.9;
swap_floats (x, y);
cout << x << " " << y << endl;
```

then the output will be 0.9 5.8

Q40. Write a function named "sum_from_to" that takes two integer arguments, call them "first" and "last", and returns as its value the sum of all the integers between first and last inclusive. Thus, for example,

```
cout << sum_from_to(4,7) ; // will print 22 because 4+5+6+7 = 22
cout << sum_from_to(-3,1) ; // will print -5 'cause (-3)+(-2)+(-1)+0+1 = -5
cout << sum_from_to(7,4) ; // will print 22 because 7+6+5+4 = 22
cout << sum_from_to(9,9) << endl; // will print 9
```

Q41. A positive integer n is said to be prime (or, "a prime") if and only if n is greater than 1 and is divisible only by 1 and n . For example, the integers 17 and 29 are prime, but 1 and 38 are not prime. Write a function named "is_prime" that takes a positive integer argument and returns as its value the integer 1 if the argument is prime and returns the integer 0 otherwise. Thus, for example,

```
cout << is_prime(19) << endl; // will print 1
cout << is_prime(1) << endl; // will print 0
cout << is_prime(51) << endl; // will print 0
cout << is_prime(-13) << endl; // will print 0
```

WRITE DOWN THE OUTPUT OF THE FOLLOWING (10 MARKS)

`main() {`
`int n = 3;`
`while (n >= 0)`
`{`
`cout << n * n << endl;`
`--n;`
`}`
`cout << n << endl;`
`getch();`
`}`
	OUTPUT (3)

`main()  {`
`int scr = 2;`
`switch (scr) {`
`case 1:`
`cout << "A"; break;`
`case 2:`
`cout << "B";`
`scr = scr + 2 ; break;`
`case 3:`
`cout << "C";`
`scr = scr – 2 ; break;`
`case 4:`
`cout << "D"; break;`
`default:cout << "E";`
`}`
`cout<<<<endl`
`cout<<"Score:"<<scr;`
`}`
	OUTPUT (3)

`main()  {`
`int m, s, tot = 0;`
`for( m=1; m<=3; m++ ){`
` for( s=3; s>=1; s--)`
`  cout<< m <<"–" <<s;`
`cout<<endl;`
`}`
`}`
	OUTPUT (4)

FIND THE SYNTAX ERRORS IN THE FOLLOWING CODE AND REWRITE THE CODE VERY CLEARLY (5 MARKS)

```
#include <iostream.cpp>
Main();
{
int a=1
Cout < ' Enter any value to print table ';
Cin << a;
For (int i = 1 , i < = 10 , i++)
cout << a <<"x"<< i <<"="<< axi;
GETCH();
}
```