

CLASS XI
SUBJECT – COMPUTER SCIENCE

Time Allowed : 3 hrs.

Max. Marks : 70

General Instructions

- i) **Answer all the questions.**
- ii) **Programming language C++**

1. Answer the following questions: (2x8 = 16 marks)
 - a. What are the differences between an entry controlled loop and an exit controlled loop? Support your answer with example.
 - b. What do you understand by Nested Structures? Explain with example.
 - c. Define Inheritance and Encapsulation.
 - d. What are the characteristics of a good program?
 - e. Differentiate between syntax and logical errors. Give examples.
 - f. Differentiate between Global Variable and Local Variable.
 - g. Differentiate between Actual Parameter and Formal Parameter. Give suitable example.
 - h. What is difference between relational operators and Logical operators?
2. Give the output of the following codes (Assuming all header files are included) .
 - a. void main() (2)

```
{ char s[] = "Mind@Work!";
for(int i=0; s[i]!='\0'; i++)
{
if( ! isalpha(s[i]))
s[i]='*';
else if (isupper(s[i]))
s[i]=s[i]+1;
else
s[i]=s[i+1];
}
cout<<s; }
```
 - b. #include<iostream.h> (3)

```
struct Pixel
{
int C,R;
};
void Display(Pixel P)
{
cout<<"Col"<<P.C<<"Row"<<P.R<<endl;
}
void main()
{
Pixel X={ 10,40},Y,Z;
Z=X;
X.C+=20;
```

```

        Y=Z;
        Y.C+=90;
        Y.R+=20;
        Z.C-=15;
        Display(X);
        Display(Y);
        Display(Z);
    }
c.      #include<iostream.h>          (3)
        void Execute(int &x,int y=200)
        { int temp=x+y;      x+=temp;
          if(y!=200)
          cout<<temp<<" "<<x<<" "<<y<<endl;
        }
        void main()
        {      int a=50,b=20;
          Execute(b);
          cout<<a<<" "<<b<<endl;
          Execute(a,b);
          cout<<a<<" "<<b<<endl; }

```

3. a. Rewrite the following program after correcting the error(s), if any. Also underline the corrections made. (2)

```

# include<iostream.h>
# include<string.h>
int main( )
{      int vehiclenu, vehiclenu[30],nowheels=0;
  cin>>vehiclenu;
  gets(vehiclenu) ;
  if (vehiclenu= " Car")
      nowheels+=4;      }

```

b. Give the name of header file and function of the following built-in functions: (3)
 (i) clrscr() (ii) strlen()

c. Name the header files that shall be required for successful compilation of the following C++ program: (1)

```

int main()
{ char str[20];
  cout<<fabs(-34.776);
  cout<<"\nEnter string ";
  cin.getline(str,20);
  return 0;}

```

d. Go through the following c++ code, find out the **correct possible output(s)** from the suggested output options i) to iv). Also write the **highest value** which can be assigned to variable G :

(2)

```

#include<iostream.h>
#include<stdlib.h>
void main( )
{

```

```

randomize( );
int G,H=5;
G=random(H)+30;
for(int i=35;i>G;i--)
cout<<i<<' '$';
cout<<i;
}

```

- i) 35\$34\$33\$32\$31\$30\$
- ii) 35\$34\$33\$32\$31
- iii) 30\$31\$32\$33\$34\$35\$36
- iv) 35\$34\$33\$32\$31\$30

e. If we are having four variables named as a, b, c, d having values 4, 7, 12, 4 respectively. Solve the related expression following: $(1*2 = 2)$

- (i) $(a>b) \&\& (a==d) \parallel (c>d)$
- (ii) $(\text{True} \&\& !\text{False}) \parallel \text{False}$

f. How many bytes of memory is allocated to a, b, c and d if a, b, c and d are declared as below: (2)

```

int a;      long b; double d; char c;

```

4. Answer the following Questions:

a. An array S[40][30] is stored in the memory along the row with each of the element occupying 2 bytes, find out the memory location for the element S[15][5], if an element S[20][10] is stored at the memory location 5500. (3)

b. Write a function in C++ to print the sum of left diagonal elements and right diagonal elements of 3 x 3 matrix. (3)

Example

Input : Array is

3	4	6
1	5	7
2	4	8

Output : Sum of left diagonal elements is 16

Sum of Right diagonal is 13

c. Write a function `int sum(int x[])` to return the sum of even elements present in an integer array of 20 elements passed as parameter. (3)

d. Write a program to read a string and print the total number of alphabets, digits and special characters in that string. (3)

e. Declare a structure **Student** with the following elements: (4)

Rollno	integer type
Name	string type
Stream	string type
Average	float

Write a function **Read_student(student s[])** which takes an array of 5 objects of type student and display the details of students of Non Medical Stream.

f. Write a program to accept garment_code, cost of the garment as input and calculate the bill amount after deducting DISCOUNT as per the following criteria: (4)

Cost	Amount
Less than 500	no discount
501-2000	5% discount

2001-3000	10% discount
3001 above	15% discount

4. Answer the following questions: (10 marks)

- a. What is difference between freeware and shareware? (1)
- b. Name two Proprietary software along with their applications. (1)
- c. Differentiate between Preemptive Scheduling and Non Preemptive Scheduling.
- d. What do you understand by Utility software? Name any two.
- e. What do you understand by secondary memory? What is a Byte?

5. Make the following conversions: (1x 4 = 4 marks)

- a. $(45)_{10} = (?)_2$
- b. $(735)_8 = (?)_2$
- c. $(110100101111)_2 = (?)_{10}$
- d. $(A3F)_{16} = (?)_2$