SRI SATHYA SAI VIDYA VIHAR, INDORE
ANNUAL EXAMINATION - FEBRUARY2019
CLASS XI
SUBJECT : COMPUTER SCIENCE

Time : 3 Hrs.   Max Marks 70

General Instructions :
- There are total 11 questions and 4 printed pages.
- All questions are compulsory.
- Programming language : C++.

Q.1.a. Explain POST. — 1
   b. Distinguish between Static and Dynamic RAM. — 1
   c. What is the difference between run time error and compile time error? Give an example of each. — 1
   d. Define (i) Throughput (ii) Demand Paging — 1
   e. Differentiate between preemptive and non-preemptive scheduling. — 1
   f. Differentiate between RAM and ROM. — 1
   g. List steps of program development. — 2

Q.2.a. What is difference between return and break statement ? — 1
   b. List 2 uses of preprocessor directive. — 1
   c. Write the type of C++ Operators (Arithmetic, Logical, and Relational Operators) from the following: — 1

      (i) !   (ii) = =   (iii) &&   (iv) %

   d. Evaluate the following, where p, q are integers and r, f are floating point numbers. The value of p=8, q=4 and r=2.5 — 1

(i) f = p * q + p/q

(ii) r = p + q + p % q

   e. Differentiate between call by value and call by reference. — 2
   f. Name the header files that shall be needed for successful compilation of the following C++ code : — 2

```
void  main()
{ int N, G;
  char R;
  cin>>N>>R;
  if(isdigit(R))
     G=sqrt(N-5)+5;
  cout<<G<<endl;
  getch();
}
```

   g. Find the possible output(s) of the following program. Explain the reason for the same. Assume all necessary header files are included. — 2

```
void main()
{   randomize();
    int Low=2+random(3), High=5+random(3);
    char C[ ] = "ABCDEFGHIJ";
    for(int I=Low;I<=High;I++)
        cout<<C[I];
    cout<<endl;
}
```

(i) BCDE   (ii) CDEF   (iii) CDE   (iv) DCEFG

Q.3. Rewrite the following program after removing syntactical error(s) if any. **4**
Underline each correction. Assume all necessary header files are included.

a.
```cpp
void sub(int, int);
void main( );
{
    int n1,n2;
    cin>>n1>>n2;
    int r = sub(n1);
    cout<<r;
}
int sub(int & k);
{       k=k+4;
}
```

b.
```cpp
void main( )
{       int p[ ] = {90,10,24,15}; q, number = 4;
        q=9;
        for[int i=number-1;i>=0;i--]
            switch(i)
                case 0:
                 case 3: cout<<p[i]*q<<endl;    break;
                case 1:
                case 2:cout<<a;
}
```

Q.4. Give the output(s) of the following program code(s). Assume all necessary **12**
header files are included.

a.
```cpp
int p= 6;
void change (int &a, int &b, int c)
{
    p=a % b;
    c=c+a;
    a=a+8;
    b = p+a ;
    cout<<p<<" "<<a<< "  "<<b<< " "<<c<<endl;
}
void main( )
{
    int p=3,q=7;
    change(::p, p, q);
    cout<<::p<< " "<< p<<" " << q<<endl;
}
```

b.
```cpp
void main( )
{
    int a[3][3]={0};
    for(int i=0; i<3; i++)
    {    cout<<endl;
        for(int j=0; j<3; j++)
        {       a[i][j] = 2 * i + 3*j;
                cout << a[i][j] << " ";
        }
    }
}
```

c.
```
struct game
{     int score, bonus;
}
void update(game &T, int n=10)
{     T.score++;
      T. bonus = T.bonus + n;
}
void outdata (game T)
{     cout<< "\n"<<T.score <<" : "<<T.bonus;
}
void main( )
{
   Game G = {100,40};
   update(G,20);
   Game G1 = G;
   update(G1,-5);
   Game G2 = G1;
   update(G2);
   outdata(G);
   outdata(G1);
   outdata(G2);
}
```

d.
```
void Secret(char Str[ ])
{     int L=strlen(Str);
      for (int C=0;C<L/2;C++)
          if (Str[C]=='A' || Str[C]=='E')
              Str[C]=Str[L-C-1];
      else
      {         char Temp=Str[C];
          Str[C]=Str[L-C-1];
          Str[L-C-1]=Temp;
      }
}
void main()
{   char Message[ ]="AnnualExam";
    Secret(Message);
    cout<<Message<<endl;
}
```

Q.5. Perform the following conversions :   **8**
   a. $(671.75)_{10}=$ (   )$_2$
   b. $(11001101.1101)_2 =$ (   )$_{10}$
   c. $(B1D2)_{16} =$ (   )$_2$
   d. $(7521)_8 =$ (   )$_{16}$
   e. $(451)_{10} =$ (   )$_8$
   f. Express -54 in 2s complement form (8 bit representation).
   g. Write binary equivalent of AT.
   h. Add -19 and 11 in binary form (6 bit binary).

Q.6. Write a program to input 1-d array of size N and find average of all odd numbers   **4**
     stored at even position of the array.

Q.7. Write a program to input 2-d array of size M X N and copy largest element of each   4
row in 1- d array as follows:
Eg : 2-d array
7 2 5 5 6
3 1 2 3 9
5 8 8 4 2
0 7 3 9 1
The resultant 1-d array :   7 9 8 9

Q.8. Write a function that takes two strings A and B as parameters and returns 1 if   5
both the strings are same otherwise returns 0. Write complete C++ program.
(DO NO USE INBUILT FUNCTIONS)

Q.9. Write a function that takes a string as parameter and displays the following   5
pattern. Write complete C++ program.
   Eg if string is HELP
   OUTPUT
      H
      HE
      HEL
      HELP

Q.10. Write a function that takes two numbers as parameter and returns 1 if it is Amicable   5
numbers otherwise returns 0. Write complete C++ program.

Amicable numbers are a pair of numbers with the following property: the sum of
all of the proper divisors of the first number (not including itself) exactly equals
the second number while the sum of all of the proper divisors of the second number
(not including itself) likewise equals the first number.

For example let's show that 220 & 284 are amicable numbers:

First we find the proper divisors of 220:
   1, 2, 4, 5, 10, 11, 20, 22, 44, 55, 110
If you add up all of these numbers you will see that they sum to 284.
Now find the proper divisors of 284:
   1, 2, 4, 71, 142
These sum to 220, and therefore 220 & 284 are amicable numbers

Q.11. Declare structure Sports in C++ with following members :   5
   • S_Code of type long
   • S_Name of type character array (String)
   • Fees of type integer
   • Duration of type integer
Write a program to input S_Code, S_Name, Duration for N sports and calculate
fees as per the following conditions:

S_Name	Fees
Table Tennis	2000
Swimming	4000
Football	3000

Output all the records.