

Guru Gobind Singh Public School

Sector : V/B, Bokaro Steel City

1.

a) Write the types of tokens(keywords and user identifiers) from the following :

i) case ii) _delete iii) WHILE iv) 21stName

b) Which c++ header file(s) are essentially required to be included to run/execute the following c++ code.

```
void main()
{
    int last=25;
    for(int c=9;c<=last;c++)
        cout<<c<<":"<<sqrt(c)<<endl;
}
```

c) Rewrite the following program after removing the syntactical errors(if any). Underline each correction.

```
#define 10*number MAX(Number)
void main()
{
    int num,newnum;
    cout<<"Number :";
    cin<<num;
    if num<10
        newnum=MAX(num);
    else
        newnum=num-2;
    cout<<"New Number :"<<newnum<<endl;
}
```

d) Find and write the output of the following c++ program code :

Note : Assume all required header files are already included in the program :

```
void decider(int &k, int l=70)
{
    if(k>l)
        k-=l;
    else
        k+=l;
}
void main()
{
    int m=100,n=40;
    decider(m,n);
    cout<<m<<"#"<<n<<endl;
    decider(m);
    cout<<n<<"#"<<m<<endl;
}
```

```

}
e) Find and write the output of the following c++ program code :
Note : Assume all required header files are already included in the program :
void dispScore(int s[],int n)
{
    for(int count=0;count<n;count++)
        cout<<s[count]<<"#";
        cout<<endl;
}
void main()
{
    int *point,score[]={10,5,20,15};
    point=score;
    dispScore(score,2);
    for(int count =0;count<4;count++)
    {
        cout<<*point<<".";
        if(count%2==0)
            point++;
        else
        {
            *point+=10;
            point++;
        }
    }
    cout<<endl;
    dispScore(score,4);
}

```

f) Which option will not be the expected output from the given program. What will be the minimum and maximum value assigned to the variable Sequence :

```

void main()
{
    int Sequence, Select[4]={25,90,30,45};
    randomize();
    for( int c=0;c<4;c++)
    {
        sequence=random(4-C);
        cout<<select[Sequence]<<"@";
    }
}

```

i) 45@90@30@25@
 iii) 30@30@25@25@

ii) 90@25@90@25@
 iv) 30@30@90@25@

g) Which option will not be the expected output from the given program. What will be the minimum and maximum value assigned to the variable low and high :

```

void main()
{

```

```

        randomize();
        int low=2+random(3), high=5+random(3);
        char c[]="ABCDEFGHJIJ";
        for(int i=low;i<=high;i++)
            cout<<c[i];
        cout<<endl;
    }

```

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

h)

```

void main()
{ clrscr();
  int a[]={3,5,6,7};
  int *p,**q,***r,*s,*t,**ss;
  p=a;
  s=p+1;
  q=&s;
  t>(*q+1);
  ss=&t;
  r=&ss;
  cout<<*p<<**q<<***r;
}

```

2. a) Differentiate between Data hiding and Data Encapsulation in context of Object Oriented programming. Also give a suitable example illustrating the same in c++.

b) Observe the following c++ code and answer the questions (i) and (ii) . Assume all necessary files are included

```

class Game
{
    int pcode,round,score;
public:
    Game() // Member function 1
    {
        pcode=1;round=0;score=0;
    }
    Game(Game &g) // Member function 2
    {
        pcode=g.pcode+1;
        round=g.round+2;
        score=g.score+10;
    }
};
void main()
{
    _____ // Statement 1
    _____ // Statement 2
}

```

- i) Which Object Oriented Programming feature is illustrated by the member function 1 and member function 2 together in the class Game ?
- ii) Write statement 1 and statement 2 to execute member function 1 and member function 2 respectively.

c Define a class Tour in C++ with the description given below :

Private Members :

TCode of type string

NoofAdults of type integer

NoofKids of type integer

Kilometres of type integer

TotalFare of type float

Public Members :

- A constructor to assign initial values as follows :

TCode with the word "NULL"

NoofAdults as 0

NoofKids as 0

Kilometers as 0

TotalFare as 0

- A function AssignFare () which calculates and assigns the value of the data member TotalFare as follows

For each Adult

Fare(Rs) For Kilometers

500 >=1000

300 <1000 & >=500

200 <500

For each Kid the above Fare will be 50% of the Fare mentioned in the above table

For example :

If Kilometres is 850, NoofAdults = 2 and NoofKids = 3

Then TotalFare should be calculated as

NumofAdults * 300 + NoofKids * 150

i.e. 2*300 + 3*150=1050

- A function EnterTour() to input the values of the data members TCode, No_of_Adults, No_of_Kids and Kilometers and invoke the Assign Fare() function.

- A function ShowTour() which displays the content of all the data members for a Tour.

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

```
class Digital
{
    int ID;
    protected :
        float amount;
        int seconds;
    public:
        digital()
        void Register();
        void disp();
};
class print
{
```

```

        int PID;
        protected:
            float amount;
            int sqinch;
        public:
            print();
            void get();
            void print();
};
class Media: public print , private Digital
{
    int MID;
    public:
        media();
        void enter();
        void print();
};
void main()
{
    Media M;                // Statement 1
    _____            // Statement 2
}

```

- i) Which type of inheritance is illustrated in the above example ?
 - ii) Write the names of all the member functions, which are directly accessible by the object M of class Media as declared in main() function.
 - iii) What will be the order of execution of the constructor , when the object M of class Media is declared inside main() ?
 - iv) Write statement 2 to call function print() of class print from the object M of class Media .
3. a) What will be the contents of an array after third pass if an array is sorted using selection sort. If an array initially contains values 7, 4, 1, 6, 2, 3
- b) Write a function which accept an integer array and its size as argument and shift all the even elements on the left side and odd elements on the right side in an array. For example , if array contains 11 , 23, 24, 55, 4
Then output should be 4, 24, 23, 55, 11
- c) Write a function which will accept a string as a parameter and check whether it is palindrome or not using pointer.
- d) Write a a c++ program to enter an integer array of 5 elements and check whether it is arranged in ascending order/descending order/not arranged.
- e) G[15][20] is a two dimensional array , which is stored in the memory along the column with each of its element occupying 4 bytes, find the address of the element G[5][10], if the element G[2][4] is stored at the memory location 52000.
- f) An array Arr[1...15][1...8] is stored in the memory along the column with each of the element occupying 4 bytes, find out the the base address and the address of an element Arr[3][2], if the location Arr[5][7] is stored at the address 2500.

4. a) Write a definition of a member function PUSHBOOK() in c++ to add information of BOOK in a static stack implemented using an array of structure BOOK (definition of struct BOOK is defined below for reference)

```
struct BOOK
{
    int BNO;
    char title[20];
};
```

- b). Write a user-defined function in c++ to perform a insert operation in a dynamically allocated queue. The structure is given below

```
struct emp{
    int empno;
    char empname[20];
    emp *link;
}
```

- c). Evaluate the following postfix notation of expression:

(Show status of stack after each operation)

- i) 100 , 40, 8 , + , 20, 10, - , + , *
ii) true, False, NOT, OR, False, True , OR, AND

- d) Write a function definition ARTICLES() in c++ to count all the articles "the", "a", and "an" present in a text file "BOOK.TXT".

Note : Ensure that "the", "a" and "an" are counted as independent words and not as a part of any other word.
