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Code Number 83/2



INDIAN SCHOOL MUSCAT
SECOND TERM EXAMINATION 2017
COMPUTER SCIENCE

CLASS: XI

Sub. Code: 083

Time Allotted: 3 Hrs

17.12.2017

Max. Marks: 70

General Instructions:

1. Answer all the questions.
2. Answer all the subdivisions of a question in sequence.
3. Programming Language is C++.
4. Write Programs neatly and clearly

1. a. What is a Variable? What is the difference between signed and unsigned data types? 2
- b. What is integral promotion? What will be the result of $7\%4$ & $7.2\%3.1$? 2
- c. What output the following will produce : 2
- ```
int a=10;
cout<<a<<(a==10)<<(a=5)<<a;
int i=5;
cout<<i++<<i++<<endl;
cout<<++i<<++i<<endl;
```
- d. Name the type of errors in the following situations : 2
- (a) A variable used before its initialization
  - (b) Divide by zero error
  - (c) Use of = instead of == in if statement
  - (d) Statement missing semicolon
2. a. Give the header files to which the following in-built functions belong to : 1
- (i) isdigit() (ii) strcpy()
- b. Write one difference each for the following : 2
- i. puts() and cout statement.
  - ii. strlen() and strcmp()
- c. Predict the output of the following C++ Program assume all the required header files are included 2
- ```
void main()
{
for(int n1=0; n1<2;++n1)
for(int n2=1;n2<=3;n2+=2)
cout<<n2<<"t"<<n1<<"t";
```

```
cout<<endl;
}
```

- d. Predict the output of the following C++ Program when the input is (a) 'M' (b) 'K' (c) 'A' (d) 'X' (Assume all required header files are included) 2

```
void main()
{ char ch;
  cin>>ch;
  switch(ch)
  { case 'M': cout<<"Merit Award"<<endl;
    case 'A': cout<<"Annual Award"<<endl;
    case 'K': cout<<"Khimji Award"<<endl;
      break;
    case 'E': cout<<"Athletic Award"<<endl;
    default : cout<<"Error Enter correct code !!!";
  }
}
```

- e. Identify and correct the errors in the following C++ code assume all required header files are included : 2

```
void main()
{int num=4;
do
{ ans=*num;
  cout<ans;
} while(num<10)
}
```

- f. Write a C++ Program to generate the following pattern : 3

```
1 2 3 4 5
 1 2 3 4
   1 2 3
    1 2
     1
```

- g. Write a C++ program to find and print the sum of digits of a number entered by the user. 3
3. a. Answer the following questions as instructed: 2

(i) Find the number of elements and number of bytes required for the multidimensional array X[5][20] of double type .

(ii) Assign the value 88 to 5th element of the array A[10].

- b. Rewrite the following program after removing all the errors, underline each correction. 3

```
#include<iostream.h>
void main()
{ int sum[ 2][ ];
int total=3.5;
sum[2][3]= {1,2,3,4,7,8};
```

```

for(int i=0;i<2;i++)
for( j=0;j<=3;i++)
{ total=total+sum;
  cout<<sum[j]; }
}

```

- c. Find out the output for the following program assume all required header files are included : 3

```

void main()
{ int a[5]= {2,10,15,20,25};
int i, j, k;
i = ++a[0] ;
j= a[2]++;
k= a[i];
cout<<i<<"\t"<<j<<"\t"<<k<<endl;
for(int x=0;x<5;x+=2)
cout<<a[x];
}

```

- d. Predict the output for the following program assume all the required header files are included: 3

```

void main()
{ char s[]="#47 NaTiOnaL Day#";
int x;
x=strlen(s);
for(int i=0;i<x;++i)
{ if (isdigit(s[i]))
    s[i]='$';
  else if(isalpha(s[i]))
    {if (islower(s[i]))
        s[i]=toupper(s[i]);
      else
        s[i]=s[i+1];
    }
  else
    s[i]='@'; }
cout<<"\n Now the String is : "<<s;
}

```

- 4 a. Write a program in C++ which accepts a 2D array of integers and its size and displays the elements of middle row and the elements of middle column.[Assuming the 2D Array to be a square matrix with odd dimension i.e. 3x3, 5x5, 7x7 etc...] Example, if the array contents is 3

```

3 5 4
7 6 9
2 1 8

```

Output should be :
Middle Row : 7 6 9
Middle column : 5 6 1

- b. Write a program to accept an integer array A[10] from the user and swap the elements of every even location with its following odd location and display it. 3
- For example: if the content of the array is
- 2,4,1,6,5,7,9,23,10,55
- The content of the array become
- 4,2,6,1,7,5,23,9,55,10
- c. Write a program to input 5 strings and sort the strings in the ascending order. 3
- d. Write a program to read a string str. Count and display number of words in the string. 2
- 5 a. What is a structure? How do you access structure members explain with an example. 2
- b. Define a structure **EMPREC** that stores information about an employee such as empno (long int), name (20 characters), address (30 characters), salary (float) and jod (date). Where jod stores information of type date with members day (integer), month (integer) and year (integer). 3
- Declare a variable **emp** and initialize it with valid values.
- c. Rewrite the corrected code for the following program underline each correction : 3
- ```
#include<iostream.h>
void main()
{
structure club{ int mem no;
 char memname[20];
 char memtype[]="LIG";
 }
club per1,per2;
cout<<"\n Enter the details";
cin>>memno;
gets(per1.memname);
gets(per1.memtype);
per1=per2; //assign values of per1 to per2
cout<<per2;
}
```
- d. Predict the output for the following program assume all the required header files are included: 3
- ```
void main()
{
struct box { int x,y,z; };
box T={ 10,20,5},T1;
int Step=5;
T.x+=Step;
T.y-=Step;
T.z+=Step;
cout<<T.x<<" "<<T.y<<" "<<T.z<<endl;
++Step;
```

```

T.x+=Step;
T.y*=Step;
T.z-=Step;
T1=T;
cout<<T1.x<<" "<<T1.y<<" "<<T1.z<<endl;
}

```

- e. Define a structure **Employee** with the following members : Idno (integer), name (20 characters), basicpay (float), bonus (float) and salary (float). Write a C++ Program to read Idno, name and basicpay of **n employees** and compute bonus as per the following criteria 4

Basicpay	Bonus
> 2000	10% of Basicpay
1000 – 2000	20% of Basicpay
< 1000	25% of Basicpay

Display Idno, name, basicpay , bonus and salary (is calculated as sum of basicpay & bonus) of the employee getting highest salary.

- 6 a. Write a function prototype for a function called area which has two variables ‘X’ of type int and ‘Y’ of type float and returning floating point variable. 1
- b. Answer the following questions based on the given program: 2

```

#include <iostream.h>
void sum(int, float &);
void main()
{
int a=4;
float b=7;
sum(a,b);
}
void sum(int k, float &m)
{
int z= k+m;
cout<<z;
}

```

Answer the following based on the above code:

- (a) Method of passing value to function sum
- (b) function header
- (c) actual & formal parameters
- (d) Data type of the function sum.

- c. Predict the output of the following program : 3

```

#include<iostream.h>
void print(int &x, int z, int y=50)
{ int temp=x+y;
x+=temp;
}

```

```

if(y!=50)
cout<< "\n"<<x<<temp<<z<< "\n";
}
void main( )
{ int a=100 b=60,c=20;
  print(b,a);
  cout<< "\n"<<a<<b;
  print(c,a,b);
  cout<< "\n"<<a+c<<b;
}

```

- c. Write a program using function to print the sum of the following series. Give the function name as **“series”**. Accept the value of “x” and the number of terms “n” within the function. Display the result from the main () function. 4

$$x + x^2/2 - x^3/3 + \dots + x^n/n$$

End of the Question Paper