

INDIAN SCHOOL MUSCAT
SECOND TERM EXAMINATION
SUBJECT : COMPUTER SCIENCE 083

MARKING SCHEME

CLASS: XI

Sub. Code: 083

Max. Marks 70

17.12.2017

1. a. What is a Variable? What is the difference between signed and unsigned data types? 2

A variable is a named storage location that can hold any data value. Signed data type can represent -32768 to 32767 values and unsigned can represent 0 to 65535 values highest in signed is 32767 where as in unsigned it is 65535.

1m for definition and 1m for difference.

- b. What is integral promotion? What will be the result of `7%4` & `7.2%3.1`? 2

The conversion of integer types char, short, enumerator into int is called integral promotion.

`7%4` is 3, `7.2%3.1` will result in error

1m for definition and 1/2 m each for correct result.

- c. What output the following will produce : 2

```
int a=10;
```

```
cout<<a<<" "<<(a==10) <<" "<<(a=5)<<a;
```

5 0 5 10

1/2 m each for correct answer

```
int i=5;
```

```
cout<<i++<<i++<<endl;
```

```
cout<<++i<<++i<<endl;
```

65

98

1/2 m each for correct answer

- d. Name the type of errors in the following situations : 2

(a) A variable used before its initialization - **compile time - syntax error**

(b) Divide by zero error - **runtime error**

(c) Use of = instead of == in if statement - **logical error**

(d) Statement missing semicolon - **syntax error**

1/2 m each for correct answer

2. a. Give the header files to which the following in-built functions belong to : 1

(i) isdigit() **ctype.h** (ii) strcpy() **string.h**

1/2 m each.

b. Write one difference each for the following : 2

i. puts() and cout statement.

ii. strlen() and strcmp()

1 m each for any one valid difference.

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;
```

```
}
```

1 0 3 0 1 1 3 1

1/4 m each for correct answer

d. Predict the output of the following C++ Program when the input is 2

(a) 'M' (b) 'K' (c) 'A' (d) 'X' (Assume all required header files are included)

```
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 !!!";
```

```
}
```

```
}
```

(a) **Merit Award** (b) **Khimji Award** (c) **Annual Award**

Annual Award

Khimji Award

Khimji Award

(d) **Error Enter correct code !!!**

1/2 m for correct answer for each option

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;           ans*=num 1/2 m ; ans should be declared 1/2 m
  cout<ans;          cout<<ans; 1/2 m
} while(num<10)      while(num<10); 1/2 m
}

```

- 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

```

Header file, declarations 1 mark

Correct nested loop & output statement with endl at correct place 2 m

- g. Write a C++ program to find and print the sum of digits of a number entered by the user. 3

Header file, declarations 1/2 mark

Correct loop & output statement with endl at correct place 2 1/2 m

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 .

Number of elements = 5 * 20 = 100 elements

Number of bytes = 800 bytes

1/2 m each for correct answer

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

A[4]=88

1 m for correct answer

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

```

#include<iostream.h>
void main()
{
int sum[ 2][ ];           int sum[ 2][3] only row subscript is optional 1/2 m
int total=3.5;           int total=3; 1/2 m
sum[2][3]={ 1,2,3,4,7,8}; array cannot be initialized 1/2 m
for(int i=0;i<2;i++)
for( j=0;j<=3;i++)       for( j=0;j<=3;j++) 1/2 m
{ total=total+sum;       total=total+sum[i][j]; 1/2 m
  cout<<sum[j];   }     cout<<sum[i][j]; 1/2 m
}

```

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

Middle column : 5 6 1

½ m for header files, input statement

2 ½ m for correct loop & output statements

- 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

1 m for header files, input & output statements

2 m for correct loop statements for swapping values

- c. Write a program to input 5 strings and sort the strings in the ascending order. 3

1 m for header files, input & output statements

2 m for correct loop statements

- d. Write a program to read a string str. Count and display number of words in the string. 2

½ m for header files, input statements

1 ½ m for counting and displaying the number of words.

- 5 a. What is a structure? How do you access structure members explain with an example. 2

Structure is a collection of logically related variables referenced under one name.

Any valid example.

1 m for definition and 1 m for example

- 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). Declare a variable **emp** and initialize it with valid values. 3

```
struct date { int day,month,year};
```

```
struct EMPREC{ long int empno;
```

```
    char name[20];
```

```
    char address[30];
```

```
    float salary;
```

```
    date jod;
```

```
    };
```

```
EMPREC emp={1000,"Rahul","10, Ruwi, CBD",2000.50,{10,10,2000}};
```

1 m for structure definition, 1 m for declaration and 1 initialization 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;           struct club  ½ m
                char memname[20];
                char memtype[ ]="LIG";   char memtype[ 10];  ½ m
                }                          };           ½ m
club per1,per2;
cout<<"\n Enter the details";
cin>>memno;           cin>>per1.memno           ½ m
gets(per1.memname);
gets(per1.memtype);
per1=per2; //assign values of per1 to per2      per2=per1;  ½ m
cout<<per2;           cout<<per2.memno<<per2.memname<<per2.memtype; ½ m
}
```

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;
}
```

15,15,10

21,90,4

½ m each correct value.

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.

1 m for declaration & input statements

2 m for correct logic and assigning value for Bonus & salary.

1 m for displaying information of 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

```
float area(int X, float Y);
```

1 m for correct answer

- 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;
}
```

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

½ m for each option

- b. 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;  
}
```

100170

210190100

310170

1 m each line of correct answer.

- 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

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

1 1/2 m for declaration, input , output statements and function call

2 1/2 m for correct logic in function, input values and return statement.