



INDIAN SCHOOL DARSAIT

SECOND TERM EXAMINATION - DECEMBER, 2017

COMPUTER SCIENCE (083) – ANSWER SCHEME



Class: XI
Date: -12-2017

Max. Marks: 70
Time: 3hr

General Instructions:

(i) All questions are compulsory.

| | | | |
|----|----|---|---|
| 1. | a) | What is the role of comments in C++ program? To increase the readability of program. (1 mark for definition) | 1 |
| | b) | What is the purpose of header file in a C++ program? Name the header files for the functions (i) getch() (ii) setfill() Header file contains stored functions and commands and their respective specification for compiler. (i) conio.h (ii) iomanip.h | 2 |
| | c) | Construct Logical expressions to represent the following conditions if an Ch is an uppercase letter. Also What is the output of following code fragment? int ch = 20; cout << ch++ << endl << ++ch; Ch >= 65 && Ch <= 92 Output 20 22 | 2 |
| | d) | Give the output for the following expression: (i) 5 >= 6 && 9 = = 9 12 - 9 < 8 (ii) True and false or not false (i) True (ii) True | 2 |
| | e) | Write a ++ program to accept a number and check if it is even or odd. If even calculate its square else cube. Display the result. (Use conditional operator.) <pre>#include<iostream.h> #include<conio.h> void main() { int n; cout << "Enter an integer: "; cin >> n; int k=(n % 2 == 0) ? n*n : n*n*n; cout<<k; getch(); }</pre> | 3 |
| 2. | a) | What is the difference between entry controlled and exit controlled loop? Explain with an example. | 2 |

| Topics | Entry controlled loops | Exit controlled loops |
|-------------------------|--|--|
| Test condition | Test condition appears at the beginning. | Test condition appears at the end. |
| Control variable | Control variable is counter variable. | Control variable is counter & sentinel variable. |
| Execution | Each execution occurs by testing condition. | Each execution except the first one occurs by testing condition. |
| Examples | <pre>sum = 0; while(num>0) { printf("Input a number.\n"); scanf("%d", &num); }</pre> | <pre>===== do { printf("Input a number.\n"); scanf("%d", &num); } while(num>0); =====</pre> |
| b) | <p>Convert the following code snippet to switch case in c++</p> <pre>void main() { int ch,x=0; cin>>ch; if(ch==1) cout<<"one"; else if(ch==2) { cout<<"two"; x++;} else cout<<x; getch(); }</pre> <pre>void main() { int ch,x=0; cin>>ch; switch(ch) { case 1 : cout<<"one"; break; case 2: cout<<"two"; x++;break; default: cout<<x; } getch(); }</pre> | 2 |
| c) | <p>Write a C++ program to check if a given number is palindrome. Accept the number from the user.</p> <pre>#include <iostream> void main()</pre> | 3 |

```

{
int n, num, digit, rev = 0;
cout << "Enter a positive number: ";
cin >> num;
n = num;
do
{
digit = num % 10;
rev = (rev * 10) + digit;
num = num / 10;
} while (num != 0);
cout << " The reverse of the number is: " << rev << endl;
if (n == rev)
cout << " The number is a palindrome";
else
cout << " The number is not a palindrome";
getch();
}

```

d) Write a menu driven program in C++ to perform the following operations:

- 1.Area of circlen
- 2.Area of Rectangle
- 3.Area of triangle

```

#include<iostream.h>
#include<conio.h>
#include<math.h>

void main()
{
clrscr(); //to clear the screen
float a,b,c,s,r,area;
int ch;
cout<<"***Menu***n1.Area of circlen2.Area of Rectangle";
cout<<"n3.Area of trianglenEnter your choice:";
cin>>ch;

switch(ch)
{
case 1:
{
cout<<"nEnter radius of the circle:";
cin>>r;
area=3.14*r*r;
break;
}
case 2:
{
cout<<"nEnter length and breadth:";
cin>>a>>b;
area=a*b;
break;
}
case 3:

```

3

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|----|----|--|---|
| | | <pre> { cout<<"\nEnter three sides of the triangle:"; cin>>a>>b>>c; s=(a+b+c)/2; area=sqrt(s*(s-a)*(s-b)*(s-c)); break; } default: cout<<"\nWrong choice...!!!"; break; } cout<<"Area="<<area; getch(); //to stop the screen } </pre> | |
| 3. | a) | <p>Given the following declaration, answer the questions that follow:</p> <pre>int a[5]={3,7,4,9,6};</pre> <p>(i) What is the location of element 9? (ii) Write the c++ code snippet to display the element in reverse order.</p> <p>(i) 3 (ii) <pre>for(i=4;i>=0;i--) cout<<a[i];</pre></p> | 2 |
| | b) | <p>Give the output for the following code snippet:</p> <pre>void main() { int i,j,k,a[]={5,10,15,20}; a[0]=10; for(i=0;i<=2;i++) a[i]=a[i]+i; for(i=3;i>=0;i--) cout<<a[i]<<" "; getch(); }</pre> <p>20 17 11 10</p> | 2 |
| | c) | <p>Write a C++ program to print the sum of all odd and even elements in a 1D array of size M.</p> <pre> #include<iostream.h> #include<conio.h> void main() { int arr[20],even[20],odd[20],i,j=0,k=0,no; clrscr(); cout<<"How Size of Array: "; cin>>no; cout<<"Enter any "<<no<<" elements in Array: "; for(i=0; i<no;i++) { cin>>arr[i]; } for(i=0; i<no;i++) </pre> | 3 |

```

{
if(arr[i]%2==0)
{
even[j]=arr[i];
j++;
}
else
{
odd[k]=arr[i];
k++;
}
}
cout<<"\nEven Elements: ";
for(i=0; i<j ;i++)
{
cout<<even[i]<<" ";
}
cout<<"\nOdd Elements: ";
for(i=0; i<k; i++)
{
cout<<odd[i]<<" ";
}
getch();
}

```

- d) Write a C++ program to accept a 1D array of size M. Accept a search element from the user. If the search element is present display 'Element found' else 'Element not found'.

```

#include<iostream.h>
#include<conio.h>
void main()
{
clrscr();
int arr[10], i, num, n, c=0;
cout<<"Enter the array size : ";
cin>>n;
cout<<"Enter Array Elements : ";
for(i=0; i<n; i++)
{
cin>>arr[i];
}
cout<<"Enter the number to be search : ";
cin>>num;
for(i=0; i<n; i++)
{
if(arr[i]==num)
{
c=1;
}
}
if(c==0)
{

```

3

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|----|----|---|---|
| | | <pre> cout<<"Number not found..!!"; } else { cout<<num<<" found at position "<<pos; } getch(); } </pre> | |
| 4. | a) | <p>What is the size and number of elements for the following array : float MATH[20][5];</p> <p>Elements= 100 Size=400bytes</p> | 1 |
| | b) | <p>Identify the valid declaration of a 2D array from following :</p> <p>(i) Int x[2][8]; (ii) int arr[20][3]; (iii) char Add[20][20]; (iv)float per[2.5][2];</p> <p>Also, Declare a 2d array named ‘numbers’ of integers of size 3x3 and initialize them with values. (i.e. first element 1, second 2, third 3 ...)</p> <p>(ii) int arr[20][3]; (iii) char Add[20][20]; Int numbers[3][3]={ {1,2,3},{4,5,6} };</p> | 2 |
| | c) | <p>Write C++ program to accept a MxN matrix and find the sum of only those elements which are divisible by 10. Also display the result.</p> <pre> #include <iostream> #include <conio.h> int main() { int arr[10][10],row,col,i,j,s=0; cout<<"Enter size of row and column: "; cin>>row>>col; cout<<"Enter elements of matrices(row wise)"<<endl; for(i=0;i<row;i++) for(j=0;j<col;j++) cin>>arr[i][j]; cout<<"Displaying matrix"<<endl; for(i=0;i<row;i++) { for(j=0;j<col;j++) cout<<arr[i][j]<<" "; cout<<endl; } cout<<"sum="<<endl; for(i=0;i<row;i++) { for(j=0;j<col;j++) if(arr[i][j]%10==0) s+=arr[i][j]; } cout<<s; getch(); } </pre> | 3 |

d) Write a C++ program to accept two matrices of size $M \times N$ and $P \times Q$, multiply both the matrices and display the product of the resultant matrix.

4

```
#include<conio.h>
#include<iostream>
using namespace std;
int main()
{
    int a[10][10], b[10][10], c[10][10];
    int x, y, i, j, m, n;

    cout << "\nEnter the number of rows and columns for Matrix A:::\n\n";
    cin >> x >> y;

    // x denotes number rows in matrix A
    // y denotes number columns in matrix A
    cout << "\n\nEnter elements for Matrix A :::\n\n";
    for (i = 0; i < x; i++)
    {
        for (j = 0; j < y; j++)
        {
            cin >> a[i][j];
        }
        cout << "\n";
    }
    cout << "\n\nMatrix A :\n\n";
    for (i = 0; i < x; i++)
    {
        for (j = 0; j < y; j++)
        {
            cout << "\t" << a[i][j];
        }
        cout << "\n\n";
    }
    cout << "\n-----\n";
    cout << "\nEnter the number of rows and columns for Matrix B:::\n\n";
    cin >> m >> n;
    // m denotes number rows in matrix B
    // n denotes number columns in matrix B

    cout << "\n\nEnter elements for Matrix B :::\n\n";
    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
        {
            cin >> b[i][j];
        }
        cout << "\n";
    }
    cout << "\n\nMatrix B :\n\n";
    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
```

```

    {
        cout << "\t" << b[i][j];
    }
    cout << "\n\n";
}
if (y == m)
{
    for (i = 0; i < x; i++)
    {
        for (j = 0; j < n; j++)
        {
            c[i][j] = 0;
            for (int k = 0; k < m; k++)
            {
                c[i][j] = c[i][j] + a[i][k] * b[k][j];
            }
        }
    }
    cout
        << "\n-----\n";
    cout << "\n\nMultiplication of Matrix A and Matrix B :\n\n";
    for (i = 0; i < x; i++)
    {
        for (j = 0; j < n; j++)
        {
            cout << "\t" << c[i][j];
        }
        cout << "\n\n";
    }
}
else
{
    cout << "\n\nMultiplication is not possible";
}
getch();
return 0;
}

```

5. a) What is the difference between strcmp() and strcmpi(). Explain with an example each. Also mention which header file the function belongs to.

2

strcmp() function
 strcmp() function in C compares two given strings and returns zero if they are same. If length of string1 < string2, it returns < 0 value. If length of string1 > string2, it returns > 0 value. Syntax for strcmp() function is given below.
 int strcmp (const char * str1, const char * str2);
 strcmp() function is case sensitive. i.e, “A” and “a” are treated as different characters.

strcmpi() function
 strcmpi() function in C is same as strcmp() function. But, strcmpi() function is not case sensitive. i.e, “A” and “a” are treated as same characters. Where as, strcmp() function treats “A” and “a” as different characters.
 strcmpi() function is non standard function which may not available in standard library in C.

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| | <p>Both functions compare two given strings and returns zero if they are same. If length of string1 < string2, it returns < 0 value. If length of string1 > string2, it returns > 0 value. Syntax for strcmp() function is given below.</p> | |
| b) | <p>Find and write the output of the following C++ program code: Note: Assume all required header files are already included in the program.</p> <pre> void main() { char Str[10]="HARMONIOUS"; int C,L; L=strlen(Str); for (C=0;C<L;C+=2) { if (Str[C]>='M' && Str[C]<='U') Str[C]='@';} cout<<Str<<endl; } </pre> <p>HA@M@NIO@S</p> | 2 |
| c) | <p>Find and write the output of the following C++ program code: Note: Assume all required header files are already included in the program.</p> <pre> void MyCode (char Msg [], char CH) { for (int (Cnt=0;Msg[Cnt]!='\0';Cnt++) { if (Msg[Cnt]>='B' && Msg[Cnt]<='G') Msg[Cnt]=tolower(Msg[Cnt]); else if (Msg[Cnt]=='A' Msg[Cnt]=='a') Msg[Cnt]=CH; else if (Cnt%2==0) Msg[Cnt]=toupper(Msg[Cnt]); else Msg[Cnt]=Msg[Cnt-1]; } } void main () { char MyText [] =" ApEACeDriVE"; MyCode(MyText,'@'); cout<<"NEW TEXT:"<<MyText<<endl; } </pre> <p>NEW TEXT :@@e@ccddIle</p> | 3 |
| d) | <p>Write a C++ program to find the total number of characters, words and uppercase letters in a Paragraph of text. Accept the text from the user.</p> <pre> #include<iostream.h> #include<conio.h> #include<stdio.h> void main() </pre> | 3 |

| | | | |
|----|----|--|---|
| | | <pre> { char str[300]; int i,charcount=0,words=1,upp=0; clrscr(); cout<<"\nEnter the Paragraph ie message: \n"; gets(str); for(i=0;str[i]!='\0';i++) { charcount++; if(str[i]==' ') words++; if (str[i]>='A' && str[i]<='Z') upp++; } cout<<"\nNumber of Characters in the entered message: "<<charcount; cout<<"\nNumber of Words in the entered message: "<<words; cout<<"\nNumber of Uppercase Letters in the entered message: "<<upp; getch(); } </pre> | |
| 6. | a) | <p>What is the difference between actual and formal argument?</p> <p>The parameter that appear in a function call statement i.e., which are passed are actual parameters. The parameter that appear in a function definition i.e., which receive the passed value are formal parameters.</p> | 1 |
| | b) | <p>Given the function</p> <pre> int thrice(int x) { return(x*3); } </pre> <p>Write the main() function definition to call the function thrice with value '5' as the argument.</p> <pre> void main() { cout<<thrice(5); getch(); } </pre> | 1 |
| | c) | <p>Write a C++ program to accept the principle, amount and rate from the user and calculate the simple interest, and display to the user.</p> <pre> #include<iostream.h> #include<conio.h> float si(int p,int r,int t) { return ((p*t*r)/100.0); } void main() { clrscr(); int p,t; float s,r; </pre> | 2 |

```

cout<<"enter p,r,t";
cin>>p>>r>>t;
s=si(p,r,t);
cout<<s;
getch();
}

```

d) Find and write the output of the following C++ program code:
 Note: Assume all required header files are already included in the program.

3

```

void Execute(int &B, int C = 100)
{
  int temp = B + C;
  B += temp;
  if (C == 100)
    cout << temp << " " << B << " " << C << endl;
}
int main()
{
  int M = 90, N = 10;
  Execute(M);
  cout << M << " " << N << endl;
  Execute(M, N);
  cout << M << " " << N << endl;
  getch();
}

```

190 280 100
 280 10
 570 10

e) Bring out the difference between call by value and call by reference with an example.

3

| Call By Value | Call by reference |
|---|--|
| ✓ Call by value is used to create a temporary copy of the data which is transferred from the actual parameter in the final parameter. | ✓ Call by reference is used to share the same memory location for actual and formal parameters |
| ✓ The changes done in the function in formal parameter are not reflected back in the calling environment. | ✓ The changes done in the function are reflected back in the calling environment. |
| ✓ It does not use & sign | ✓ It makes the use of the & sign as the reference operator. |

Example:

```

void compute (int A, int & B)
{
  A++;
  B++;
  cout<<"The function on display gives ";
  cout<<"A = "<<A<<"&"<<"B="<<B<<endl;
}
void main( )
{
  int I=50, J=25;
  cout<<"Initial of function call "<<endl;
  cout<<"I="<<I<<"&"<<"J="<<J<<endl;
  compute(I,J); cout<<"After the call of the function"<<endl;
  cout<<"I="<<I<<"&"<<"J="<<J<<endl;
  getch( );
}

```

| | | | |
|----|----|--|---|
| 7. | a) | Define a structure. Collection of different data types under one tag name. | 1 |
| | b) | <p>Rewrite the following program after removing the syntactical error(s), if any. Underline each correction.</p> <pre>#include<iostream.h> void main() { struct STUDENT { char stu_name[20]; char stu_gender; int stu_age=17; }student; gets(stu_name); gets(stu_gender); getch(); }</pre> <pre>#include<iostream.h> #include<stdio.h> int main() { struct STUDENT { char stu_name[20]; char stu_sex; int stu_age; //Initialization of variables inside a structure is not allowed. }student; gets(student.stu_name); cin>>student.stu_sex; //A single character cannot be read using gets return 0; }</pre> | 2 |
| | c) | <p>Find and write the output of the following C++ program code: Note: Assume all required header files are already included in the program.</p> <pre>struct Pixel { int C,R; }; void Display(Pixel P) { cout<<"col"<<P.C<<"Row"<<P.R<<endl ; } int main() { Pixel X={40,50},Y,Z; Z=X; X.C+=10; Y=Z; Y.C+=10; Y.R+=20; Z.C-=15;</pre> | 3 |

| | | |
|----|--|---|
| | <pre> Display(X); Display(Y); Display(Z); Getch(); } col50Row50 col50Row70 col25Row50 </pre> | |
| d) | <p>Create a structure Customer with following data members:</p> <ul style="list-style-type: none"> • customer number(integer) • customer name(string) • customer address(string) • quantity(int) • priceperunit(float) • NetPrice(float) <p>Write a C++ program to accept 'N' customer details. Calculate the NetPrice (priceperunit*quantity) for all N customers. Display only those customers whose NetPrice is more than 2000.</p> | 4 |