

INTERNATIONAL INDIAN SCHOOL-DAMMAM
PRELIMINARY EXAMINATIONS , FEB-2013
CLASS -XII

COMPUTER SCIENCE(083)

SET-1

Time allowed : 3 hours

Maximum Marks : 70

Instructions:

- (i) *All questions are compulsory.*
- (ii) *Programming Language: C++*

1. (a). What do you understand by member functions? How do they differ from ordinary function? 2

(b). Which C++ header file(s) are essentially required to be included to run/execute the following C++ source code (Note: Do not include any header file, which is/are not required): 1

```
void main()
{
char STRING[]="Something";
cout<<"Balance Characters:"<<160-strlen(STRING)<<endl;
}
```

(C). Rewrite the following program after removing the syntactical errors (if any).

Underline each correction.

2

```
#include <iostream.h>
struct Pixels
{ int Color,Style;}
void ShowPoint(Pixels P)
{ cout<<P.Color,P.Style<<endl;}
void main()
{
Pixels Point1=(5,3);
ShowPoint(Point1);
Pixels Point2=Point1;
Color.Point1+=2;
ShowPoint(Point2);
}
```

(d). Find the output of the following program:

3

```
#include<iostream.h>
void ChangeArray(int Number, int ARR[ ], int Size)
{
    for (int L =0; L<Size; L++)
        if (L<Number)
            ARR [L] +=L;
        else
            ARR [L] *=L;
}
void Show (int ARR [ ], int Size)
{
    for (int L=0; L<Size; L++)
        (L%2==0) ?cout<<ARR[L] <<"#" : cout<<ARR[L]<<endl ;
}
void main ( )
{
    int Array [ ] = {300, 200, 400, 100, 600, 500};
    ChangeArray (5, Array, 6);
    Show (Array, 6);
}
```

(e) Find the output of the following program :

2

```
#include<iostream.h>
void main()
{
    int Numbers[] = {2,4,8,10};
    int *ptr = Numbers;
    for (int C = 0; C<3; C++)
    {
        cout<< *ptr << "@";
        ptr++;
    }
    cout<<endl;
    for(C = 0; C<4; C++)
    {
        (*ptr)*=2;
        --ptr;
    }
    for(C = 0; C<4; C++)
        cout<< Numbers [C] << "#";
    cout<<endl;
}
```

- (f). Go through the C++ code shown below, and write ONE OF THE POSSIBLE OUTPUT which program may produce. Also, write the least value and highest value, which can be assigned to the variable Guess.

2

```
#include <iostream.h>
#include <stdlib.h>
void main ( )
{
    randomize ( ) ;
    int Guess, High=4;
    Guess=random(High)+ 50 ;
    for(int C=Guess ; C<=55 ; C++)
        cout<<C<<"#" ;
}
```

2.

- (a). What do you understand by function overloading ?
Give an example illustrating its use in C++ program.

2

- (b). Answer the questions (i) and (ii) after going through the following class:

2

```
class Seminar
{
    int Time;
public:
    Seminar() //Function 1
    {
        Time=30;cout<<"Seminar starts now"<<endl;
    }
    void Lecture() //Function 2
    {
        cout<<"Lectures in the seminar on"<<endl;
    }
    Seminar(int Duration) //Function 3
    {
        Time=Duration;cout<<"Seminar starts now"<<endl;
    }
    ~Seminar()
    //Function 4
    {
        cout<<"Vote of thanks"<<endl;
    }
};
```

i) In Object Oriented Programming, what is Function 4 referred as and when does it get invoked/called?

ii) In Object Oriented Programming, which concept is illustrated by Function 1 and Function 3 together? Write an example illustrating the calls for these functions.

(c). Define the class RENT in C++ with following description :

4

Private members :

CARID of type long integer

ABOUTCAR of type string

CARTYPE of type string

RENT of type float

Member function ASSIGNRENT() to assign the following values for RENT as per the given CARTYPE.

CARTYPE	RENT
Small	1000
Van	800
SUV	2500

Public members

A function GETCAR() to allow user to enter values for CARID, ABOUTCAR, CARTYPE and call ASSIGNRENT() to assign RENT

A function SHOW() to display all the data members on the screen .

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

4

class ORGANIZATION

{

char Address[20];

double Budge, Income;

protected:

void Computet();

public:

ORGANIZATION();

void Get();

void Show();

};

class WORKAREA: ORGANIZATION

{

char Address[20];

int Staff;

protected:

double Pay;

void Calculate();

```

public:
WORKAREA () ;
void Enter() ;
void Display() ;
};
class SHOWROOM: protected ORGANIZATION
{
char Address [20];
public:
void Enter() ;
void Show() ;
};

```

- (i) Name the type of inheritance illustrated in the above C++ code.
- (ii) Write the names of all the data members, which NOT are accessible from member functions of Class SHOWROOM
- (iii) Write the names of all the member functions, which are accessible from objects Belonging to class WORKAREA.
- (iv) Write the name of all the members, which are accessible from objects of Class SHOWROOM.

3

- (a). Write a User Defined function in C++ TRANSFER(int A[], int B[], int N) to create elements of array B[] with the help of corresponding elements of array A[] ie

3

- i. if A[i] is a positive even B [i] should be 1 ,
- ii. if A[i] is negative odd B[i] should be -1 ,
- iii. if A[i] is positive odd, B[i] should be A[i]*A[i] ,
- iv. if A[i] is negative even B[i] should be positive even of A[i]
- v. and if A[i] is zero B[i] should also be zero.

For example If the content of array A is

-98, 56, 0, -23, -34, 54, 5

The content of B array should become

98, 1, 0, -1, 34, 1, 25

- (b). An array Arr[40][10] is stored in the memory along the column with each element occupying 4 bytes. Find out the address of the location Arr[3][6] if the location Arr[30][10] is stored at the address 9000. 3

- (c). Write a function in c++ to Insert an element into a dynamically allocated Queue where each node contains a name (of type string) as data. Assume the following definition of NODE for the same.

4

```
struct NODE
{
    char Name[20];
    NODE *Link;
};
```

- (d). Convert the following infix expression into postfix. Show the stack status at each step. 2

(TRUE &&FALSE) || ! (FALSE || TRUE)

- (e). Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column. 2

[Assuming the 2D Array to be a square matrix with odd dimension
i.e. 3×3, 5×5, 7×7 etc...]

Example, if the array content is

3 5 4

7 6 9

2 1 8

Output through the function should be :

Middle Row : 7 6 9

Middle Column : 5 6 1

4.

- (a). Observe the program segment given below carefully and fill the blanks marked as Statement-1 and Statement- 2 using seekg(), seekp() tellp() and tellg() functions for performing the required task. 1

```
#include <fstream.h>
class ITEM
{
    int Ino;char Iname[20]; float Price;
public:
    void ModifyPrice() ;//The function is to modify
    price of a particular ITEM
};
void item: :ModiyPrice()
{
    fstream File;
    File.open ("ITEM.DAT", ios::binary | ios::in | ios: :out) || ;
    int CIno:
```

```

while (file.read ((char*) this, sizeof (ITEM)))
{
if (CIno==Ino)
{
cout<<"Present Price:"<<Price<<endl;
cout<<"Changed price:"; cin>>Price;
int FilePos = _____; //Statement 1,
_____ ; //Statement 2
File.write((char*)this,sizeof(ITEM)) ;
// Re-writing the record
}}
File.close( ) ;
}

```

- (b). Write a function in C++ to print the count of the word **is** as an independent word in at text file DIALOGUE.TXT.

2

For example, if the content of the file DIALOGUE. TXT is
This is his book. Is this book good?
Then the output of the program should be 2.

- (c). Write a function in C++ to search for a camera from a binary file "CAMERA.DAT" containing the objects of class "CAMERA (as defined below). The user should enter the NAME and the function should search display the details of the camera.

3

```

class CAMERA
{
long ModelNo;
float MegaPixel;
int Zoom;
char NAME[120];
public:
void Enter ( ) {cin>>ModelNo>>MegaPixel>>Zoom;gets(NAME);}
void Display ( )
{cout<<ModelNo<<MegaPixel<<Zoom<<NAME<<endl;}
Char* GetName ( ) {return NAME;}
};

```

5.

- (a). Differentiate between DDL commands and DDL commands with example.

2

- (b) Consider the following tables. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

TABLE:SENDER

SenderID	SenderName	SenderAddress	SenderCity
ND01	R Jain	2,ABC Appts	New Delhi
MU02	H Sinha	12,Newtown	Mumbai
MU15	S Jha	27/A,Park Street	Mumbai
ND50	T Prasad	122-K,SDA	New Delhi

TABLE : RECIPIENT

RecID	SenderID	RecName	RecAddress	RecCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P K Swamy	B5, C S Terminus	Mumbai
ND48	ND50 S	Tripathi	13, B1 D, Mayur Vihar	New Delhi

- (i) To display the names of all Senders from Mumbai whose name contains "M" in it.
- (ii) To display the RecID, SenderName, SenderAddress, RecName,RecAddress for every Recipient
- (iii) To display Recipient details in ascending order of RecName
- (iv) To display number of Recipients from each city
- (v) SELECT DISTINCT SenderCity FROM Sender;
- (vi) SELECT A. SenderName, B.RecName
FROM Sender A, Recipient B
WHERE A. SenderID = B.SenderID AND B.RecCity = 'Mumbai';
- (vii) SELECT RecName, RecAddress
FROM Recipient
WHERE RecCity NOT IN ('Mumbai', 'Kolkata');
- (viii) SELECT RecID, RecName
FROM Recipient
WHERE SenderID='MU02' OR SenderID='ND50';

6.

- (a). Prove $XY + YZ + X'Z = XY + X'Z$ *ALGEBRAICALLY* 2
- (b). Write equivalent canonical SOP expression of the following : $A + B'C$ 1
- (c). Draw the logic circuit $XY + X'Z'$ using OR & NOT gates only . 2
- (d). Reduce the following Boolean expression using K-Map 3

7.

- (a) What is Cyber crime? Give one example. 1
- (b) What do you mean by IP address? How is it useful in computer Security, 1
- (c). Priya is a web developer. She has designed a login form to input the login id and password of the user. She has to write a script to check whether the login id and the corresponding password as entered by user are correct or not. What kind of script from the following will be most suitable for doing the same.
- i. JSP ii. Client side script iii. VB script. 1
- (d). when do you prefer XML over HTML and Why? 1
- (e). Mentioned any two advantages of open source software over Proprietary software. 1
- (f). Name Two e-mail Protocols. 1
- (g). INDIAN PUBLIC SCHOOL in Darjeeling is setting up the network between its different wings. there are 4 wings named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H). Distance between various wings are given below.

Wing A to wing S	100m
Wing A to wing J	200m
Wing A to wing H	400m
Wing S to wing J	300m
Wing S to wing H	100m
Wing J to wing H	450m

No of computers :

Wing A	10
Wing S	200
Wing J	100
Wing H	50

- i. Suggest a suitable topology for networking of computers of all wings. 1
- ii. Name the wing where the server is to be installed. Justify your answer. 1
- iii. Suggest the placement of Hub/switch in the network 1
- iv. Mention an economic technology to provide internet accessibility to all wings. 1