

COMPUTER SCIENCE**CLASS XII****REVISION EXAMINATION****Maximum Marks: 70****Time: 3 Hours**

1. (a) Using a suitable example, distinguish between a Syntax error and Run-time error. (2)
(b) Name the header file(s) that shall be needed for successful compilation of the following source code:

```
void main()
{
    char text[10] = "CUSTARD";
    strcat(text, "-APPLE");
    puts(text);
}
```

(1)

- (c) Rewrite the following program after removing the syntactical error(s), if any. Underline each correction:

```
#include<iostream.h>
int N = 5;
void main()
{
    int age[N];
    int temp;
    age = {20,50,10,30,40};
    for(int i=0,temp; i<N/2; i++)
        doIT(age[i],age[N-i-1]);
    for(i=0; i<N; i++)
        cout<<age[i]<<endl;
}
void doIT(int &x,int &y)
{
    temp = x;
    x = y;
    y = temp;
}
```

(2)

- (d) Find the output of the following program by reasoning your solution:

```
#include<iostream.h>
void main() {
    int tofee[] = {3,5,7,9};
    int* ptr = tofee;
    for(int K=5; K<8; ++K,ptr++)
        cout<<*ptr<<'$';
    for(int M=8; M<12; M++, --ptr)
        (*ptr) *= 3;
    cout<<endl;
    for(int P=12; P<16; P++)
        cout<<tofee[P-12]<<'#';
```

(3)

```

        cout<<endl;
    }

```

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1. (e) Predict the output of the following program using a relevant handout:

```

#include<iostream.h>
void main() {
    const int M = 3, N = 4, P = M*N;
    int matrix[M][N] = {1,2,3,4,5,6,7,8,9,10,11,12};
    int a[P],r,c,k=0;
    for(c=0; c<N; c++)
    for(r=0; r<M; r++)
        a[k++] = matrix[r][c];
    for(k=0; k<P; k++)
        cout<<a[k]<<' ';
    cout<<endl;
}

```

(2)

- (f) In the following program write down the possible output(s) shown in options (i) to (iv):

```

#include<iostream.h>
#include<stdlib.h>
void main() { const int M = 7;
char* days[M] = {"Sun","Mon","Tue","Wed","Thu","Fri","Sat"};
    randomize(); int num = M - random(3);
    cout<<num<<endl;
for(int j=num-1; j<M; j++) cout<<days[j]<<endl;
}

```

- Options: (i) Sat
(ii) Fri Sat
(iii) Thu Fri Sat
(iv) Wed Thu Fri Sat

(2)

2. (a) Distinguish between a Default constructor and Constructor with default arguments. (2)
(b) Define a class Tour in C++ with the description given below:

Private members:

TCode (String), NoOfAdults (integer), NoOfKids (integer), Kilometers (integer), TotalFare (long integer)

Public members:

A constructor function to hold the following values: NULL, 0, 0, 0, 0 to each of the (4)

respective members.

A function AssignFare() which calculates and assign TotalFare as per the table:

Fare (in Rupees)	For Kilometers
500	>= 1000
300	< 1000 and >= 500
200	< 500

For each kid the above Fare will be 50% of the Fare given in the above table.

A function EnterTour() to accept the input data members.

A function ShowTour() to displays all data members.

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2. (c) Fill in the four Blank statements, so that the following C++ program produces the output that shown below:

Expected Output

Score of Ramu is 50
 Score of Balu is 70
 Score of Ramu is 50
 Score of Appu is 60

Source Code

```
#include<iostream.h>
#include<string.h>
class Student
{
    char name[10];
    int score;
public:
    Student ()
    {
        strcpy(name, "Appu");
        score = 60;
    }
    Student(int num) {
        strcpy(name, "Ramu");
        ----- Blank statement-1 -----
    }
    Student(char str[])
    {
        ----- Blank statement-2 -----
        score = 70;
    }
}
```

(2)

```

        Student(Student& s)
        {
            ----- Blank statement-3 -----
            ----- Blank statement-4 -----
        }
        ~Student()
    {
        cout<<"Score of "<<name<<" is "<<score<<endl;
    }
};
void main()
{
    Student a;
    Student b(50);
    Student c("Balu");
    Student d = b;
}

```

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2. (d) Answer the questions (i) to (iv) from the source code given below:

```

class Teacher {
    int teacherID;
    void getID();
protected:
    char deptName[15];
    void getDeptName();
public:
    int experience;
    void showAll();
};
class Parents {
    int parentID;
    void showID();
protected:
    char childName[15];
    void getChildName();
public:
    int class;
    void showAll();
};
class Meeting : private Teacher , protected Parents {
    char date[11];
    void getDate();
protected:

```

(4)

```
float expenses;
void showExpenses();
public:
int present;
void showEverything();
};
```

- (i) Write the names of data member(s) of the class Teacher that is / are accessible from objects belonging to class Meeting.
 - (ii) Write the names of all the members function(s) of class Parents which is / are not accessible from objects belonging to class Meeting
 - (iii) Write the names of data member(s) that is / are not accessible from objects belonging to class Meeting
 - (iv) How many bytes will be required by an object belonging to class Meeting?
3. (a) An array MARKS[20][15] is stored in the memory along with the column with each element occupying eight bytes. Find out the BASE address and address of the element MARKS[5][8] if the element of MARKS[4][5] is stored at the address 1000. (2)
- (b) Write a program in C++ to handle a dynamically allocated Stack of N (a constant) Text books with the help of the following self-referential structure:

```
struct Book {
int accsnNo;
char bookName[35];
Book* next;
}; (4)
```

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3. (c) Given two arrays of integers A and B of sizes m and n respectively. Write a function in C++ named MERGE() which will produce a third array named C, such that the following sequence is followed:
- (i) All odd numbers of A from left to right are copied into C from left to right
 - (ii) All even numbers of A from left to right are copied into C from right to left.
 - (iii) All odd numbers of B from left to right are copied into C from left to right.
 - (iv) All even numbers of B from left to right are copied into C from right to left.
- A, B, C, m and n must be passed to the MERGE() as arguments.
For example, if A and B are respectively {3, 2, 1, 6, 7, 3} and {9, 3, 5, 6, 2, 8, 10} then resultant array C must be {3, 1, 7, 3, 9, 3, 5, 10, 8, 2, 6, 6, 2} (4)
- (d) Write C++ function which accepts 2 dimensional array of type integer and its size as arguments and exchange the values in both the diagonals as follows: The first half side elements interchanged with second half side elements of the first diagonal elements and repeat the same for the other diagonal.
Example:
If a 2-D array given is: Resultant array is as follows:
1 2 3 4 11 2 3 10 (4)

5 6 7 8	5 16 13 8
9 10 11 12	9 4 1 12
13 14 15 16	7 14 15 6

- (e) Rewrite the Postfix expression P: X, Y, +, Z, / into its equivalent Infix expression. (1)
 (f) Evaluate the following postfix expression: P: 42, 10, 3, -, /, 4, +, 2, ↑ (1)

4. (a) The following function **Update()** is meant to modify the existing data with the latest one. But it contains four missing statements. Write down the appropriate statement to make the function to execute successfully:

```
void Update() {
    fstream updateFile;
    updateFile.open( <----- Missing blank - 1 -----> )
    int rNo;
    cout<<"Enter roll number : ";    cin>>rNo;
    <----- Missing blank - 2 ----->
    int found = 0;    int rec = 0;
    while(!updateFile.eof() && (!found) )    {
        rec++;
        if(rNo == a.retrollNo()) {
            a.getDate();
            <----- Missing blank - 3 ----->
            updateFile.write( (char*)&a, sizeof(a) );
            <----- Missing blank - 4 ----->
        }
        Else    updateFile.read( (char*)&a, sizeof(a) );
    }
    if(found)
        cout<<"Roll No."<<rNo<<" is updated sucessfully\n";
    else    cout<<"Roll No."<<rNo<<" not found!\n";
    updateFile.close();
}
```

(1)

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4. (b) Write a function in C++ to print the count of the word “the” as an independent word in a text file THEOREM.TXT.
 For example, if the content of the file “THEOREM.TXT” is:

Square on the hypotenuse is same as the sum of the squares on the other two sides of the right-angled triangle.

Then the output of the program should be 4. (2)

- (c) Given a binary file GAMES.DAT, containing records of the following structure type:

```
struct Game {
    char gameName[15];
    char participantName[100][25];
```

(3)

};

Write a function in C++ that would read contents from the file GAMES.DAT and creates a file named KHOKHO.DAT copying only those records from GAMES.DAT where the game name is "Kho-kho".

5. (a) What is meant by a Candidate key? (1)
 (b) Write any two SQL Commands that are DDL Commands. (1)
 (c) Study the following Tables DOCTOR and SALARY. Write SQL Commands for the questions (i) to (iv) and give o/p for SQL Commands for the questions (v) to (viii):-

Table: **DOCTOR**

ID	NAME	DEPT	SEX	EXPERIENCE
101	John	ENT	Male	12
104	Smith	ORTHOPEDIC	Male	5
107	George	CARDIOLOGY	Male	10
114	Lara	SKIN	Female	3
109	K George	MEDICINE	Female	9
105	Johnson	ORTHOPEDIC	Male	10
117	Lucy	ENT	Female	3
111	Bill	MEDICINE	Female	12
130	Murphy	ORTHOPEDIC	Male	15

Table: **SALARY**

ID	BASIC	ALLOWANCE	CONSULTATION
101	12000	1000	300
104	23000	2300	500
107	32000	4000	100
114	12000	5200	200
109	42000	1700	300
105	18900	16900	300
130	21700	2600	700

- (i) Display NAME of all Doctors who are in MEDICINE and more than 10 yrs.experience
 (ii) Display the lowest consultation fee among all Male Doctors
 (iii) Display the number of Male and Female doctors
 (iv) Display the average salary of all doctors working in ENT where compute SALARY as the sum of BASIC and ALLOWANCE
 (v) SELECT SUM(ALLOWANCE) FROM SALARY WHERE ID BETWEEN 101 AND 105;
 (vi) SELECT NAME FROM DOCTOR WHERE NAME LIKE 'J_ _ _ _ _';
 (vii) SELECT COUNT(*) FROM DOCTOR WHERE SEX = 'Female';
 (viii) SELECT NAME, DEPT FROM DOCTOR WHERE DEPT NOT IN ('ENT', 'SKIN', 'MEDICINE'); (6)

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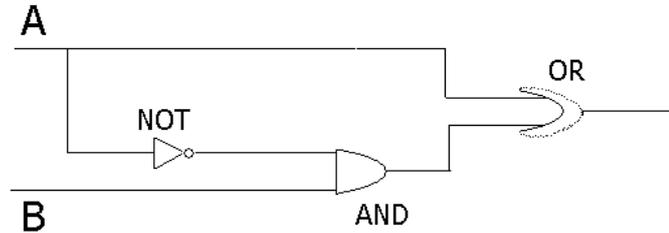
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6. (a) State and prove the Idempotence Postulates. (1)
 (b) Write the Dual of the Boolean expression that given below:

$$f(x, y) = (x' + 0) \cdot (1 + y) \cdot x + (y \cdot 0)$$
 (1)
 (c) Draw the T.T. of the Boolean function $f(a, b, c) = \pi(0, 2, 4, 6)$ and hence express the function in Canonical Sum-Of-Product form. (2)

(d) Prove algebraically the following Circuit refers to OR Gate:



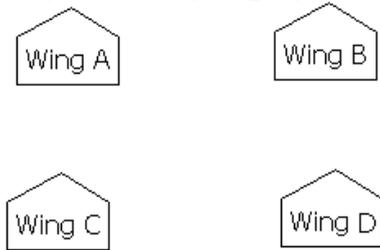
(2)

(e) Reduce the following Boolean expression using Karnaugh map:

$$f(U, V, W, Z) = \pi (0, 1, 8, 9, 10, 11, 14, 15)$$

7.(a)	Expand the following: GSM, CDMA	(1)
(b)	How XML is advantageous over HTML?	(1)
(c)	Distinguish between Hackers and Crackers.	(1)
(d)	How will you protect your system from Computer Virus?	(1)

(e) B.E.L. is setting up the network between its different wings. There are four wings named as Administration (Wing A), Sales (Wing B), Production (Wing C) and Hospital block (Wing D). The other details about the various wings follows:



Name of the Wing	No. of Computers
Wing A	150
Wing B	10
Wing C	5
Wing D	50

Distances between various wings	Distances (in meters)
WING A TO WING B	100
WING A TO WING C	200
WING A TO WING D	400
WING B TO WING C	300
WING B TO WING D	100
WING C TO WING D	450

- Suggest a suitable topology for networking the computer of all wings.
- Name the wings where the server to be installed. Justify your answer.
- Suggest the placement of Hub / Switch in the network.
- Mention an economic technology to provide network accessibility to all the wings.

(4)