

Practice Paper 1
COMPUTER SCIENCE(083)
CLASS-XII

Max Time : 3 Hours

Max Marks : 70

Q.1	a)	2
	<p>b) Write the names of header files , which are not needed in the following program :-</p> <pre>#include<iostream.h> #include<string.h> #include<stdio.h> #include<math.h> #include<iomanip.h> #include<conio.h> void main() {float x[] = {237.567 , 35.654 , 37.74} ; int i , j ; for (i = 0 ; i < 3 ; i++) {j = fmod(x[i] , 2.5) ; cout <<setw(6) << j ; } getch() ; }</pre>	1
	<p>c) Rewrite the following c++ code after removing all the syntax error(s) if present in the code , also underline each correction :-</p> <pre>#include<iostream.h> class error { int a=10 ; char b[20]="error" ; public : void A() { cin>>a ; gets(b) ; } void B() { cout<<a<<"\T"<<b } ; } void main() { error E ; E . B() ; E . A() ; E . B () ; getch() ; }</pre>	2
	<p>d) Find output of the following program segment :-</p> <pre>#include<iostream.h> #include<conio.h> void main() { int arr[] = { 5 , 2 , 7 , 9 , 3 , 5 , 6} ; int *p = arr , i ; clrscr() ; cout<<+*p++ << '@' ; i = arr[3] - arr[2] ; cout<<+*(p+i)<< '@' ; cout<<+i + *p++ << '@' ; cout<<*p++ << '@' << i << '\n' ; for(; i >=0 ; i --=2) cout<<arr[i] << '@' ; getch() ; }</pre>	3
	<p>e) Find output of the following program segment :</p> <pre>#include<iostream.h> #include<conio.h> class try { int s , t ; char g ; public : try(char gg='B') { s = 4 ; t = 1 ; g = gg ; } void st (int ss) { s += ss ; if(s>=100) t = 6 ; else if (s >=50) t = 4 ; else t = 1 ; } void nn() { g = (g == 'B') ? 'A' : 'C' ; } void disp() { cout<<g<< '@' << t << '\n' ; }</pre>	

		<pre> cout<<s<<'\n' } }; void main() { try a,b('C'); a.disp(); b.st(75); b.nn(); a.st(120); b.disp(); a.disp(); getch(); } </pre>	3
	f)	Write a function in C++ to accept two integers as parameters and return a random number lying between them .	1
Q.2	a)	What is inheritance ? How does it differ from containership ? Explain giving example.	2
	b)	Differentiate between Copy Constructor and Parameterised constructor giving example ?	2
	c)	<p>Define a class Movie in C++ with following description:</p> <p>Private members:</p> <ul style="list-style-type: none"> Title - of type string Genre - of type string Cost - of type long int YearOfRelease - of type int <p>Function Cost_per_print() - to take a parameter n and return cost of per print. Cost per print should be calculated as Cost/n+5.</p> <p>Public members:</p> <ul style="list-style-type: none"> Function Read_Data() to read an object of movie type. Function Display() to display the details of an object of movie type along with cost per print. To display cost per print the function Display() should input n and make call to the function Cost_per_print(). Function RetRelease() to return the value of YearOfRelease of an object of movie type. 	4
	d)	<p>Consider the following and answer the questions given below:</p> <pre> class School { char sname[30]; protected: long code; public: char address[50]; void INPUT(); void OUTPUT(); }; class Dept: protected School { char dname[20]; protected: float sal; void IN(); public: int a; void OUT(); }; class Teacher: public Dept { char tname[25], subject[10]; void Display(void); public: void ENTER(); }; </pre> <ol style="list-style-type: none"> 1. How much of memory space will be occupied by the object of Dept and Teacher. 2. Name the data members that can be accessed by function OUT(). 3. Name the protected member function(s) of the class Teacher. 4. Name the members accessed by the objects of class Teacher. 	4
3.	a)	<p>Write a function TRANSFER(int A[], int B[], int Size) in C++ to copy the elements of array A into array B in such a way that all the zeroes of A appear in the Beginning of B, followed by all the negative elements, followed by all the positive maintaining their respective orders in array A. For example :</p> <p>If the contents of array A are: 7, -23, 3, 0, -8, -3, 4, 0</p> <p>the contents of array B should be: 0, 0, -23, -8, -3, 7, 3, 4</p>	2
	b)	An array X[30][10] is stored in the memory with each element requiring 4 bytes of storage. If the base address of X is 4500, find out the locations of X[12][8] and X[2][4], if the content is stored along the row.	3
	c)	<p>Observe the following program segment and answer the question given below:</p> <pre> struct Node { int element; Node *link; } </pre>	4

```

};
class Queue
{
    Node *F, *R;
public:
    Queue()
    {
        F = R = NULL;
    }
    void Insert(int);
    int Delete();
    void Display();
};

```

Write outline definition of function Insert() & Delete() in above class Queue.

d) Complete the definition of PUSH() and POP() of the following class:

```

class stack
{
    char list[20][30]; int top;
public:
    stack() { top=-1;}
    void PUSH(char[]);
    char *POP();
}

```

e) Convert the following infix expression into postfix form also show the stack status while converting the infix expression:
 $a + b * c ^ (d * e) / f$

4 a) A binary file "Library.dat" contains data of 10 books where each book's data is an object of the following class:

```

class Book
{
    int AccNo; char Title[20];
public:
    void EnterData() { cin>>AccNo; cin.getline(Title,20); }
    void ShowData() { cout<<AccNo<<" - "<<Title<<endl; }
};

```

With reference to this information, write output of the following program segment:

```

ifstream File; Book B;
File.open("Library.dat", ios::binary | ios::in);
File.seekg(0, ios::end);
cout<<File.tellg();

```

b) Consider the following class declaration:

```

class bank
{
    int accno;
    char name[20];
    float balance;
public:
    void input() { cin>>accno>>name>>balance; }
    void display() { cout<<accno<<" "<<name<<" "<<balance<<endl; }
    void deposit(float amt) { balance += amt; }
    int getacc() { return accno; }
};

```

The binary file "bank.dat" stores the details of customers from the bank. Write a function in C++ to update the details of a customer for a given account number who deposited a given amount in his account without using temporary file.

c) Write a function in C++ to display the lines starting with capital alphabet from a text file "MyFile.TXT" page by page. Assuming that no line in the file is more than 80 characters long and one page consists of 10 lines.

5. a) What do you understand by CARTESIAN PRODUCT operation in relational algebra? Explain giving example?

b) Consider the following tables LIBRARY and PUBLISHER :

Table: LIBRARY

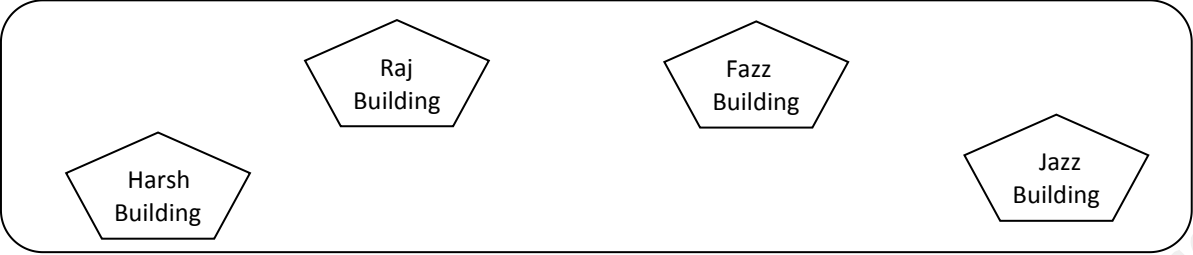
ACCNO	TITLE	PUBCODE	TYPE	NOC	NOI	PRICE
301	My first C++	101	TEXT	5	3	325
041	Fast cook	102	COOKERY	4	2	450
083	The tears	101	FICTION	6	6	800
042	Thunderbolts	102	FICTION	3	2	650
043	C++ brainworks	103	TEXT	4	2	300
034	Ques Bank	104	TEXT	10	10	250

Table: PUBLISHER

PUBCODE	CONT PER	PHNO	GENDER
101	P.Jain	25678345	MALE
102	R.Nagpal	25555555	MALE
103	Supatra	26666666	FEMALE
104	Sumita	27777777	FEMALE

Write SQL commands for the following statements:

- To display the names of all the TEXT books from LIBRARY in descending order of their price.
- To display the total number of books in each type separately.
- To display the contact person and phone number of publishers for the books whose all copies are issued out from library.
- To display publisher wise average price.
- To display the details of the books where contact person is FEMALE.

	c)	Identify primary key and foreign key in the LIBRARY table (as shown in Question 5 b).	1																				
6.	a)	Write the POS form of the Boolean Function $F(P,Q,R)=\Sigma(0,1,3,5,6)$	1																				
	b)	Draw the logic diagram for the Boolean expression $X'.(Y+Z)'$ using basic logic gates.	1																				
	c)	State the dual of the absorption law $X+X'.Y = X+Y$ and prove it algebraically.	1																				
	d)	Minimize algebraically: $AB + (AC), + AB'C(AB+C)$	2																				
	e)	Find the simplified expression for the following Boolean function using Karnaugh's map: $F(A,B,C,D)=\Sigma(0,1,2,3,5,8,9,10,11,14,15)$	3																				
7	a)	<p>VALUE ONE , a software company has to set up its new branch of BPO (ITNEW) affiliated with Green Point , USA in Kolkata . The Kolkata campus has four buildings as shown in the diagram given below :-</p> <div style="text-align: center;">  </div> <p>Center to center distances between various buildings is as follows :-</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Harsh Building to Raj Building</td> <td style="text-align: right;">50 m</td> </tr> <tr> <td>Raz Building to Fazz Building</td> <td style="text-align: right;">60 m</td> </tr> <tr> <td>Fazz Building to Jazz Building</td> <td style="text-align: right;">25 m</td> </tr> <tr> <td>Jazz Building to Harsh Building</td> <td style="text-align: right;">170 m</td> </tr> <tr> <td>Harsh Building to Fazz Building</td> <td style="text-align: right;">125 m</td> </tr> <tr> <td>Raj Building to Jazz Building</td> <td style="text-align: right;">90 m</td> </tr> </tbody> </table> <p>Number of Computers in each of the buildings as follows :-</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Harsh Building</td> <td style="text-align: right;">15</td> </tr> <tr> <td>Raz Building</td> <td style="text-align: right;">150</td> </tr> <tr> <td>Fazz Building</td> <td style="text-align: right;">15</td> </tr> <tr> <td>Jazz Building</td> <td style="text-align: right;">25</td> </tr> </tbody> </table>	Harsh Building to Raj Building	50 m	Raz Building to Fazz Building	60 m	Fazz Building to Jazz Building	25 m	Jazz Building to Harsh Building	170 m	Harsh Building to Fazz Building	125 m	Raj Building to Jazz Building	90 m	Harsh Building	15	Raz Building	150	Fazz Building	15	Jazz Building	25	
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	e1)	Suggest a cable layout of connections between the buildings.	1																				
	e2)	Suggest the most suitable place(i.e building) to house the server of this organization with a suitable reason .	1																				
	e3)	Suggest the placement of the following devices with justification : (i) Internet Connecting Device / Modem (ii) Switch	1																				
	e4)	The organization is planning to link its sale counter situated in various parts of the same city , which type of network out of LAN , MAN or WAN will be formed ? Justify your answer .	1																				
	b)	Expand GSM and CDMA ?	1																				
	c)	Write two main characteristics of cloud computing .	1																				
	d)	Rajeshwari is trying for on-line subscription to a magazine . For this she has filled in a form on the magazine's web site. When she clicks submit button she gets a message that she has left email field empty and she must fill it. For such checking which type of script is generally executed - client-side script or server-side script ? Also give the one example of such script .	1																				
	e)	Write the significance of Cyber Law.	1																				
	f)	Differentiate between HTML and XML	2																				

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