

KENDRIYA VIDYALAYA SANGATHAN
MODEL QUESTION PAPER 7
CLASS XII COMPUTER SCIENCE (083)

Blue Print

S.N	UNIT	VSA (1Mark)	SAI (2Marks)	SAII (3Marks)	LA (4Marks)	TOTAL
1	Review of C++ covered in Class XI	1 (1)	8 (4)	3 (1)		12 (6)
2	Object Oriented Programming in C++					
	Introduction to OOP using C++		2 (1)		4 (1)	6 (2)
	Constructor & Destructor		2 (1)			2 (1)
	Inheritance				4 (1)	4 (1)
3	Data Structure & Pointers					
	Address Calculation			3 (1)		3 (1)
	Static Allocation of Objects		2 (1)	3 (1)		5 (2)
	Dynamic Allocation of Objects				4 (1)	4 (1)
	Infix & Postfix Expressions		2 (1)			2 (1)
4	Data File Handling in C++					
	Fundamentals of File Handling	1 (1)				1 (1)
	Text File		2 (1)			2 (1)
	Binary Files			3 (1)		3 (1)
5	Databases and SQL					
	Database Concepts		2 (1)			2 (1)
	Structured Query Language		2 (1)		4(1)	6 (2)
6	Boolean Algebra					
	Introduction to Boolean Algebra & Laws		2 (1)			2 (1)
	SOP&POS	1 (1)				1 (1)
	Karnaugh Map			3 (1)		3 (1)
	Basic Logic Gates		2 (1)			2 (1)
7	Communication & Open Source Concepts					
	Introduction to Networking	1 (1)				1 (1)
	Media, Devices, Topologies & Protocols	2(2)			4 (1)	4 (1) 2(2)
	Security	1 (1)				1 (1)
	Webservers	1 (1)				1 (1)
	Open Source Terminologies	1 (1)				1 (1)
TOTAL		9(9)(1)	26(13)	15(5)	20(5)	70(32)

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Time : 3 hours

MM :70

Instructions :

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

Ques 1.(a) Find the correct identifiers out of the following which can be used for naming Variables, Constants or Functions in a C++ program : 2

Char, for, Float, delete, If, Name1, Sum_diagonal, 2ndproduct

- (b) Observe the following program very carefully and write the names of those header file(s), which are essentially needed to compile and execute the following program successfully : 1

```
typedef char TXT[60];
void main()
{ TXT Str[] = "I love India";
  intCounter=0;
  while (Str[Counter]!='\0')
    if ( isupper(Str[Counter]))
      Str[Counter++]= '@';
    else
      Str[Counter++]='*';
  puts(Str);
```

- (c) Observe the following C++ code very carefully and rewrite after removing any/all syntactical errors with each correction underlined. 2

Note : Assume all required header files are already being included in the program.

```
#Define float Max=50.0;
void main()
{   int Speed;
    char Stop= 'N';
    cin>>Speed;
    if Speed>Max
      Stop = 'Y';
    cout<<Stop<<end;
}
```

- (d) Write the output of the following C++ program code : 2

Not : Assume all required header files are already being included in the program.

```
#include<iostream.h>
int main()
{
    int a=32, *ptr=&a;
    charch= 'A', &cho=ch;
    cho += a;
```

```

    *ptr += ch;
    cout<<a<<" "<<ch<<endl;
    return 0;

```

- (e) Write the output of the following C++ program code : 3
 Note : Assume all required header files are already being included in the program.

```

class Calc
{
    char Grade;
    int Bonus;
public:
    Calc()
    {
        Grade='E'; Bonus=0;
    }
    void Down ( int G )
    {
        Grade - = G;
    }
    void Up ( int G )
    {
        Grade + = G; Bonus ++;
    }
    void Show()
    {
        cout<<Grade<<"#"<<Bonus<<endl;
    }
};
void main ()
{
    Calc C;
    C.Down(2);
    C.Show();
    C.Up(7);
    C.Show();
    C.Down(2);
    C.Show();
}

```

- (f) Observe the following program and find out, which output(s) out of (i) to (iv) will not be expected from the program? What will be the minimum and the maximum value assigned to the variable Chance? 2

```

#include<iostream.h>
#include<stdlib.h>
void main()
{
    randomize();

```

```

intArr[] = {9,6}, N;
int Chance = random(2) + 10;
for(int C=0 ; C<2; C++)
{
    N = random (2);
    cout<<Arr[N] + Chance << "#";
}
}

```

- (i) 9#6#
- (ii) 19#17#
- (iii) 19#16#
- (iv) 20#16#

Ques 2

- (a) What is the difference between the members in private visibility mode and the members in protected visibility mode inside a class? Also, give a suitable C++ code to illustrate both. 2
- (b) Observe the following C++ code and answer the questions (i) and (ii) :

```

class Traveller
{
    long PNR;
    char TName[30];
public:
    Traveller()
    {cout<< "Ready"<<endl; } //Function 1
    void Book (long P, char N[] ) //Function 2
    { PNR = P; strcpy (TName, N) ; }
    void Print() //Function 3
    { cout<<PNR<<TName<<endl; }
    ~Traveller () //Function 4
    { cout<< "Booking cancelled!"<<endl; }
};

```

- (i) Fill in the blank statement in Line 1 and Line 2 to execute Function 2 and Function 3 respectively in the following code: 1

```

void main()
{
    Traveller T;
    _____ //Line 1
    _____ //Line 2
} //Stop here

```

- (ii) Which function will be executed at }//Stops here ? What is this function referred as? 1

- (c) Write the definition of a class PIC in C++ with following description: 4

Private Members

- Pno //Data member for Picture Number (an integer)
- Category //Data member for Picture Category (a string)
- Location //Data member for Exhibition Location(a string)

- FixLocation //A member function to assign
//Exhibition Location as per category
//as shown in the following table

Category	Location
Classic	Amina
Modern	JimPlaq
Antique	UstadKhan

Public Members

- Enter() //A function to allow user to enter values for
//Pno, category and call FixLocation() function
- SeeAll() //A function to display all the data members

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

4

```

class Exterior
{
    int OrderId;
    char Address[20];
protected:
    float Advance;
public:
    Exterior();
    void Book(); void View();
};
class Paint : public Exterior
{
    int WallArea, ColorCode;
protected:
    char Type;
public:
    Paint();
    void PBook();
    void PView();
};
class Bill : public Paint
{
    float Charges;
    void Calculate();
public :
    Bill();
    void Billing();
    void Print();
};

```

- (i) Which type of Inheritance out of the following is illustrated in the above example ?
- Single Level Inheritance

– Multi Level Inheritance

– Multiple Inheritances

(ii) Write the names of all the data members, which are directly accessible from the member functions of class Paint.

(iii) Write the names of all the member functions, which are directly accessible from an object of class Bill.

(iv) What will be the order of execution of the constructors, when an object of class Bill is declared ?

Ques 3 (a) Write the definition of a function Alter(int A[], int N) in C++, which should change all the multiples of 5 in the array to 5 and rest of the elements as 0. For example, if an array of 10 integers is as follows :

2

A[0]	A[1]	A[2]	A[3]	A[4]	A[5]	A[6]	A[7]	A[8]	A[9]
55	43	20	16	39	90	83	40	48	25

After executing the function, the array content should be changed as follows :

A[0]	A[1]	A[2]	A[3]	A[4]	A[5]	A[6]	A[7]	A[8]	A[9]
5	0	5	0	0	5	0	5	0	5

(b) A two dimensional array P[20] [50] is stored in the memory along the row with each of its element occupying 4 bytes, find the address of the element P[10] [30], if the element P[5] [5] is stored at the memory location 15000.

3

(c) Write the definition of a member function Push() in C++, to delete a book from a dynamic stack of TEXTBOOKS considering the following code is already included in the program.

4

```
struct TEXTBOOKS
{
char ISBN[20]; char TITLE[80];
TEXTBOOKS *Link;
};
class STACK
{
TEXTBOOKS *Top;
public:
STACK(){Top=NULL;}
void Push();
void Pop();
~STACK();
};
```

(d) Write a function REVCOL (intP[] [5], int N, int M) in C++ to display the content of a two dimensional array, with each column content in reverse order.

3

Note : Array may contain any number of rows.

For example, if the content of array is as follows :

15	12	56	45	51
----	----	----	----	----

13	91	92	87	63
11	23	61	46	81

The function should display output as :

```
11    23    61    46    81
13    91    92    87    63
15    12    56    45    51
```

(e) Convert the following infix expression to its equivalent Postfix expression, showing the stack contents for each step of conversion.

2

$X / Y + U * (V - W)$

4. (a) Write function definition for SUCCESS() in C++ to read the content of a text file STORY.TXT, count the presence of word STORY and display the number of occurrence of this word.

2

Note :

- The word STORY should be an independent word
- Ignore type cases (i.e. lower/upper case)

Example :

If the content of the file STORY.TXT is as follows :

```
Successshowsothersthatwecandoit.Itispossibletoachievesuccessw
ithhardwork.LotofmoneydoesnotmeanSUCCESS.
```

The function SUCCESS() should display the following :

```
3
```

(b) Write a definition for function Economic () in C++ to read each record of a binary file ITEMS.DAT, find and display those items, which costs less than 2500.

Assume that the file ITEMS.DAT is created with the help of objects of class ITEM, which is defined below :

3

```
class ITEM
{
    int ID;char GIFT[20]; float Cost;
    public :
    void Get()
    {
        cin>>CODE;gets(GIFT);cin>>Cost;
    }
    void See()
    {
        cout<<ID<<" ":"<<GIFT<<" ":"<<Cost<<endl;
    }
    float GetCost(){return Cost;} };
```

(c) Find the output of the following C++ code considering that the binary file CLIENTS.DAT exists on the hard disk with records of 100 members. 1

```
class CLIENTS
{
    Int Cno; char Name[20];
    public :
    void In(); void Out();
};
void main()
{
    fstream CF;
    CF.open("CLIENTS.DAT",ios::binary|ios::in);
    CLIENTS C;
    CF.read((char*) &C, sizeof(C));
    CF.read((char*) &C, sizeof(C));
    CF.read((char*) &C, sizeof(C));
    int POS=CF.tellg()/sizeof(C);
    cout<<"PRESENT RECORD:"<<POS<<endl;
    CF.close();
}
```

Ques 5. (a) Observe the following table carefully and write the names of the most appropriate columns, which can be considered as (i) candidate keys and (ii) primary key. 2

Id	Product	Qty	Price	TransactionDate
101	Plastic Folder12"	100	3400	2014-12-14
104	Pen Stand Standard	200	4500	2015-01-31
105	Stapler Medium	250	1200	2015-02-28
109	Punching Machine Big	200	1400	2015-03-12
103	Stapler Mini	100	1500	2015-02-02

(b) Consider the following DEPT and WORKER tables. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii) : 6

Table : **DEPT**

DCODE	DEPARTMENT	CITY
D01	MEDIA	DELHI
D02	MARKETING	DELHI
D03	INFRASTRUCTURE	MUMBAI
D05	FINANCE	KOLKATA
D04	HUMANRESOURCE	MUMBAI

Table : **WORKER**

WN	NAME	DOJ	DOB	GENDE	DCOD
1001	George K	2013-09-02	1991-09-01	MALE	D01
1002	RymaSen	2012-12-11	1990-12-15	FEMALE	D03
1003	Mohitesh	2013-02-03	1987-09-04	MALE	D05
1007	Anil Jha	2014-01-17	1984-10-19	MALE	D04
1004	Manila Sahai	2012-12-09	1986-11-14	FEMALE	D01
1005	RSAHAY	2013-11-18	1987-03-31	MALE	D02
1006	Jaya Priya	2014-06-09	1985-06-23	FEMALE	D05

Note : DOJ refers to date of joining and DOB refers to date of Birth of workers.

- (i) To display Wno, Name, Gender from the table WORKER in descending order of Wno.
- (ii) To display the Name of all the FEMALE workers from the table WORKER.
- (iii) To display the Wno and Name of those workers from the table WORKER who are born between '1987-01-01' and '1991-12-01'.
- (iv) To count and display MALE workers who have joined after '1986-01-01'.
- (v) SELECT COUNT(*), DCODE FROM WORKER GROUP BY DCODE HAVING COUNT(*)>1;
- (vi) SELECT DISTINCT DEPARTMENT FROM DEPT;
- (vii) SELECT NAME, DEPARTMENT, CITY FROM WORKER W,DEPT D WHERE W.DCODE=D.DCODE AND WNO<1003;
- (viii) SELECT MAX(DOJ), MIN(DOB) FROM WORKER;

Ques 6.

- (a) Verify the following using Boolean Laws. 2

$$X + Y' = X.Y + X.Y' + X'.Y'$$
- (b) Draw the Logic Circuit for the following Boolean Expression : 2

$$(U + V').W' + Z$$
- (c) Derive a Canonical SOP expression for a Boolean function F, represented by the following truth table : 1

A	B	C	F(A,B,C)
0	0	0	1
0	0	1	0

0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

(d) Reduce the following Boolean Expression to its simplest form using K-Map :

3

$$F(X,Y,Z,W) = \sum(0,1,6,8,9,10,11,12,15)$$

Q 7. (a) Illustrate the layout for connecting 5 computers in a Bus and a Star topology of Networks.

1

(b) What is a spam mail ?

1

(c) Differentiate between ftp and http.

1

(d) Out of the following, which is the fastest (i) wired and (ii) wireless medium of communication?

Infrared, Coaxial Cable, Ethernet Cable, Microwave, Optical Fiber

1

(e) What is Worm ? How is it removed ?

1

(f) Out of the following, which all comes under cyber crime ?

1

(i) Stealing away a brand new computer from a showroom.

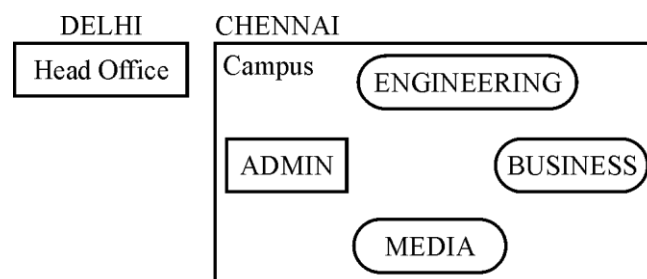
(ii) Getting in someone's social networking account without his consent and posting pictures on his behalf to harass him.

(iii) Secretly copying files from server of a call center and selling it to the other organization.

(iv) Viewing sites on a internet browser.

(g) Perfect Edu Services Ltd. is an educational organization. It is planning to setup its India campus at Chennai with its head office at Delhi. The Chennai campus has 04 (four) main buildings – ADMIN, ENGINEERING, BUSINESS and MEDIA.

You as a network expert have to suggest the best network related solutions for their problems raised in (i) to (iv), keeping in mind the distances between the buildings and other given parameters.



Shortest distances between various buildings :

ADMIN to ENGINEERING	55m
ADMIN to BUSINESS	90m
ADMIN to MEDIA	50m
ENGINEERING to BUSINESS	55m
ENGINEERING to MEDIA	50m
BUSINESS to MEDIA	45m
DELHI Head Office to CHENNAI Campus	2175km

Number of Computers installed at various buildings areas follows :

ADMIN	110
ENGINEERING	75
BUSINESS	40
MEDIA	12
DELHI Head Office	20

- (i) Suggest the most appropriate location of the server inside the CHENNAI campus (outofthe4buildings), to get the best connectivity for maximum no. of computers. Justify your answer. 1
- (ii) Suggest and draw the cable lay out to efficiently connect various buildings within the CHENNAI campus for connecting the computers. 1
- (iii) Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet uses within the campus? 1
- (iv) Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of CHENNAI campus and DELHI Head Office? 1
 - (a) Cable TV
 - (b) Email
 - (c) Video Conferencing
 - (d) Text Chat

KENDRIYA VIDYALAYA SANGATHAN
MARKING SCHEME MODEL QUESTION PAPER 7
CLASS XII COMPUTER SCIENCE (083)

General Instructions:

- The answers given in the marking scheme are SUGGESTIVE; Examiners are requested to award marks for all alternative correct solutions/ answers conveying similar meaning.
- All programming questions have to be answered with respect to C++ Language (All presently supported versions of compilers/interpreters should be considered).
- In C++, ignore case sensitivity for identifiers (Variable/Functions/ Structures/Class Names) unless explicitly specified in question.
- In SQL related questions:
 - Both ways of text/character entries should be acceptable. For example: "AMAR" and 'amar' both are acceptable.
 - All date entries should be acceptable for example: 'YYYY- MM- DD', 'YY- MM- DD', 'DD- Mon- YY', 'DD/MM/YY', 'DD/MM/YY', 'MM/DD/YY', 'MM/DD/YY' and {MM/DD/YY} are correct.
 - Semicolon should be ignored for terminating the SQL statements.
 - Ignore case sensitivity for commands.
 - Ignore headers in output questions.

1.(a)	Ans.		Char, Float, Name1, Sum_diagonal	2
			(½ Mark for each correct identifier) Note: Deduct ½ Mark for writing additional incorrect identifier(s) No marks to be awarded if all the identifiers are mentioned	
(b)	Ans		ctype, stdio	1
			(½ Mark for each correct header file) Note: Ignore any additional header file(s)	

(c)	Ans	<pre> #define Max 70.0 //Error 1,2,3 void main() //Error 4 { int Speed; //Error 5 char Stop='N'; cin>>Speed; if(Speed>Max) //Error 6 Stop='Y'; cout<<Stop<<endl; //Error 7 } </pre>	2
		<p><i>(½Markforeachcorrectionuptoamaximumof4corrections) OR</i> <i>(1Markforonlyidentifyingany4errors,withoutsuggesting corrections)</i></p>	
(d)	Ans	<p>129 a</p> <p><i>(1 Mark for each correct value of output)</i></p>	2
(e)	Ans	<p>C#0 J#1 H#1</p>	3
		<p><i>(1Mark for each correct line of output) Note:</i></p> <ul style="list-style-type: none"> • Deduct ½ Mark for not considering any or all endl(s) at proper place(s) • Deduct ½ Mark for not writing any or all # symbol(s) <p><i>OR</i> <i>(Full3marks to be awarded if undeclared object CORERROR is identified)</i></p>	
(f)	Ans	<p>(I) Min.valueofChance =10 Max.valueofChance=11</p>	2
		<p><i>(1 Mark for writing option (i))</i> <i>Note:Deduct ½ mark for writing each<u>additional</u> option along with both correct options</i></p> <p><i>(½Mark for writing correct Min.value of Chance) (½ Mark for writing correct Max.valueof Chance)</i></p>	

2. (a)	Ans		1 Mark to be awarded for writing correct difference 1 Mark to be awarded for giving correct example.	2
(b)	Ans	(i)	T.Book(1234567,"Ravi"); //Line 1 T.Print(); //Line 2	1
			<i>(½ Mark for writing each correct Function)</i>	
	Ans	(ii)	Function 4 OR ~Traveller() _____ It is a Destructor function.	1
			<i>(½Mark for writing Function4 or ~Traveller()) (½Mark for referring Destructor)</i>	

(c)	Ans	<pre> class PIC { intPno; char Category[20]; char Location[20]; voidFixLocation(); public: void Enter(); voidSeeAll(); }; void PIC::FixLocation() { if(strcmpi(Category,"Classic")==0) strcpy(Location,"Amina"); else if(strcmpi(Category,"Modern")==0) strcpy(Location,"JimPlaq"); else if strcmpi(Category,"Antique")==0) strcpy(Location,"UstadKhan"); } void PIC::Enter() { cin>>Pno;gets(Category); FixLocation(); } void PIC:: SeeAll() { cout<<Pno<<Category<<Location<<endl; } </pre>	4
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			<p>(1/2 Mark for correct syntax for class header)</p> <p>(1/2Mark for correct declaration of data members) (1Mark for correct definition of FixLocation())</p> <p>(1Mark for correct definition of Enter() with proper invocation of Fix Location() function)</p> <p>(1Mark for correct definition of SeeAll()) NOTE:</p> <ul style="list-style-type: none"> • Deduct 1/2 Mark if FixLocation() is not invoked properly inside Enter() function • No marks to be deducted for defining Member Functions inside the class <p>strcmp()/strcmpi()acceptable</p>	
(d)	Ans	(i)	Multi Level Inheritance	1
			(1Mark for mentioning correct option)	
		(ii)	Charges,Type,Advance	1
			<p>(1Mark for correct answer)</p> <p>Note: No marks to be awarded for any partial/additional answer(s)</p>	
		(ii)	Billing(),Print(),PBook(),PView(),Book(),View()	1
			<p>(1Mark for correct answer)</p> <p>Note:</p>	
			<ul style="list-style-type: none"> • No marks to be awarded for any partial/additional answer(s) • Constructors can be ignored 	
		(i)	Exterior(),Paint(),Bill()	1
			<p>(1Mark for correct answer)</p> <p>Note:No marks to be awarded for any other order</p>	

3 (a)	Ans	<pre> void Alter(int A[],int N) { for (int i=0;i<N;i++) if(A[i]%5==0) A[i]=5; else A[i]=0; } OR Any other correct equivalent function definition </pre>	2
		<p><i>(1/2Mark for correct loop)</i></p> <p><i>(1/2Mark for correct checking of divisibility of array elements by 5)</i></p> <p><i>(1/2Mark for correct use of else OR correct checking of non divisibility of array elements by 5)</i></p> <p><i>(1/2Mark for correct assignment of 5 and 10 for multiple and non multiples of 5 respectively)</i></p>	

(b)	Ans	<p>Loc(P[I][J]) along the row $= \text{BaseAddress} + W [(I - \text{LBR}) * C + (J - \text{LBC})]$ (where C is the number of columns, LBR=LBC=0) $\text{LOC}(P[5][5])$ $= \text{BaseAddress} + W * [I * C + J]$ $15000 = \text{BaseAddress} + 4 * [5 * 50 + 5]$ $= \text{BaseAddress} + 4 * [250 + 5]$ $= \text{BaseAddress} + 4 * 255$ $= \text{BaseAddress} + 1020$ $\text{BaseAddress} = 15000 - 1020 = 13980$ $\text{LOC}(P[10][30]) = 13980 + 4 * [10 * 50 + 30]$ $= 13980 + 4 * 530$ $= 13980 + 2120$ $= 16100$</p> <p>OR</p> <p>$\text{LOC}(P[10][30])$ $= \text{Loc}(P[5][5]) + W [(I - \text{LBR}) * C + (J - \text{LBC})]$ $= 15000 + 4 [(10 - 5) * 50 + (30 - 5)]$ $= 15000 + 4 [5 * 50 + 25]$ $= 15000 + 4 * 275$ $= 15000 + 1100$ $= 16100$</p> <p>OR</p> <p>(Where C is the number of columns and LBR=LBC=1) $\text{LOC}(P[5][5])$ $15000 = \text{BaseAddress} + W [(I - 1) * C + (J - 1)]$ $= \text{BaseAddress} + 4 [4 * 50 + 4]$ $= \text{BaseAddress} + 4 [200 + 4]$ $= \text{BaseAddress} + 4 * 204$ $= \text{BaseAddress} + 816$ $\text{BaseAddress} = 15000 - 816 = 14184$ $\text{LOC}(P[10][30])$ $= 14184 + 4 [(10 - 1) * 50 + (30 - 1)]$ $= 14184 + 4 [9 * 50 + 29]$ $= 14184 + 4 [450 + 29]$ $= 14184 + 4 * 479$ $= 14184 + 1916$ $= 16100$</p>	3
-----	-----	--	---

		<p><i>(1Mark for writing correct formula (for row major) OR substituting formula with correct values)</i> <i>(1Mark for at least one step of intermediate calculation) (1Mark for final correct address)</i></p>	
(c)	Ans	<pre>void STACK::POP() { if (Top!=NULL) { TEXTBOOKS *Temp; Temp=Top; cout<<Top->ISBN<<Top->TITLE<<"deleted"<<endl; Top=Top->Link; delete Temp; } else cout<<"Stack Empty"<<endl; }</pre> <p>OR Any other correct equivalent function definition</p>	4
		<p><i>(1Mark for checking Empty/Non-empty STACK)</i> <i>(1Mark for assigning Top toTemp)</i> <i>(1Mark for linking the Top to nextnode) (1Mark for deleting Tempnode)</i></p>	
(d)		<pre>void REVCOL(int P[][5],intN,int M) { for(int I=N;I>=0;I--) { for(int J=0;J<M;J++) cout<<P[I][J]; cout<<endl; } }</pre>	3
		<p><i>(1 Mark for correct nesting of loop(s))</i> <i>(1½ Mark for correct logic for reversing the content of each column)</i> <i>(½Mark for correctly displaying the content)</i></p> <p><i>Note:</i> <i>N and M can be written interchangeably for number of rows and columns</i></p>	

3.	(e)	Convert the following infix expression to its equivalent post fix expression, showing the stack contents for each step of conversion. $X / Y + U * (V - W)$	2
Ans	OR	$X / Y + U * (V - W) = ((X / Y) + (U * (V - W)))$	
		Element	Stack
		(
		(
		X	X
		/	X
		Y	XY
)	XY/
		+	XY/
		(XY/
		U	XY/U
		*	XY/U
		(XY/U
		V	XY/UV
		-	XY/UV
		W	XY/UVW
)	XY/UVW-
)	XY/UVW-*
)	XY/UVW-*+
		Element	Stack
		X	X
		/	X
		Y	XY
		+	XY/
		U	XY/U
		OR	

		<table><tr><td>*</td><td>++</td><td>XY/U</td></tr><tr><td>(</td><td>++ (</td><td>XY/U</td></tr><tr><td>V</td><td>++ (</td><td>XY/UV</td></tr><tr><td>-</td><td>++ (-</td><td>XY/UV</td></tr><tr><td>W</td><td>++ (-</td><td>XY/UVW</td></tr><tr><td>)</td><td>++</td><td>XY/UVW-</td></tr><tr><td></td><td></td><td>XY/UVW-*+</td></tr></table> <p>OR</p> <p>Any other method for converting the given Infix expression to its equivalent Postfix expression showing stack contents</p>	*	++	XY/U	(++ (XY/U	V	++ (XY/UV	-	++ (-	XY/UV	W	++ (-	XY/UVW)	++	XY/UVW-			XY/UVW-*+	
*	++	XY/U																						
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W	++ (-	XY/UVW																						
)	++	XY/UVW-																						
		XY/UVW-*+																						
		<p>(1/2 Mark for converting expression up to each operator)</p> <p>OR</p> <p>(1Mark to be given for writing correct answer without showing the Stack Contenton each step)</p>																						
4	(a)	<p>Write function definition for SUCCESS() in C++ to read the content of a textfile STORY.TXT count the presence of world STORYand display the number of occurrence of this word.</p> <p>Note:</p> <ul style="list-style-type: none">- The word STORYshould bean in dependent word- Ignore type cases(i.e.lower/uppercase) Example: <p>If the content of the file Story.TXT is asfollows:</p> <div><p>Success shows others that we can do it. It is possible to achieve success with hard work. Lot of money does not meanSUCCESS.</p><p>The function SUCCESS() should display the following:</p></div> <div></div> <p>3</p>	2																					
4. (a)	Ans	<pre>void SUCCESS() { int count=0; ifstream f("STORY.TXT"); char [20]; while (!f.eof()) { f>>s;</pre>	2																					


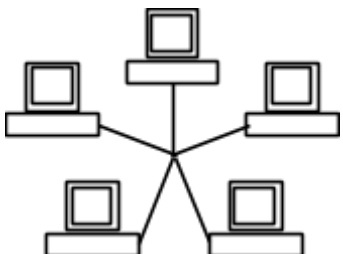
		<div></div> <pre> if(strcmpi(s,"STORY")==0) //OR if(strcmpi(s,"SUCCESS")==0) count++; } cout<<count; f.close(); 1 </pre>	
		<p><i>(½ Mark for opening STORY.TXT correctly)</i> <i>(½Mark for reading each word(using any method)from the file)</i> <i>(½Mark for comparing the word with STORY OR SUCCESS) (½Mark for displaying correct count of STORY OR SUCCESS) NOTE:</i> <i>(½Mark to be deducted if STORY or SUCCESS is compared without ignoring the case)</i></p>	
(b)	Ans	<pre> void Economic() { ITEMS I; ifstream fin("ITEMS.DAT",ios::binary); </pre>	3
		<pre> while (fin.read((char *)&I,sizeof(I))) { if(I.GetCost()<2500) I.See(); } fin.close(); } OR Anyothercorrectequivalentfunctiondefinition </pre>	
		<p><i>(½Mark for opening ITEMS.DAT correctly)</i> <i>(1Mark for reading all records from the file)</i> <i>(1Mark for checking value of Cost<2500)</i> <i>(½ Mark for displaying the desired items)</i></p>	
(c)	Ans	PRESENT RECORD: 3	1

		<p>(1Mark for writing <u>PRESENT RECORD:3</u>) OR</p> <p>(1Mark for writing only <u>3</u>) OR</p> <p>(½Mark for writing only <u>PRESENT RECORD:</u>)</p>	
5.(a)	Ans	Candidate keys: Id,Product Primary keys :Id	2
		<p>(1Mark for writing correct Candidate keys)</p> <p>(1Mark for writing correct Primary key) Note: No marks to be deducted for mentioning Price and /or Transaction Date as additional candidatekeys.</p>	
(b)		(i) To display Wno,Name, Gender from the table WORKER in descending order of Wno.	1
	Ans	<p>SELECT Wno,Name,Gender FROM Worker ORDER BY Wno DESC;</p> <p>(½Mark for SELECT Wno,Name,Gender FROM Worker) (½Mark for ORDERBY Wno DESC)</p>	
		(ii) To display the Name of all the FEMALE workers from the table WORKER.	1
		<p>SELECT Name FROM Worker WHERE Gender='FEMALE';</p> <p>(½ Mark for SELECT Name FROM Worker)</p> <p>(½ Mark for WHERE Gender='FEMALE')</p>	
		(iii)To display the Wno and Name of those workers from the table WORKER who are born between'1987-01-01'and'1991-12-01'.	1

		<p>SELECT Wno, Name FROM Worker WHERE DOB BETWEEN '1987-01-01' AND '1991-12-01';</p> <p>OR</p> <p>SELECT Wno, Name FROM Worker WHERE DOB >='1987-01-01' AND DOB <='1991-12-01'</p> <p><i>(1/2 Mark for SELECT Wno, Name FROM Worker) (1/2 Mark for WHERE DOB BETWEEN '1987-01-01' AND '1991-12-01' OR WHERE DOB >='1987-01-01' AND DOB <='1991-12-01')</i></p>							
		(iv) To count and display MALE workers who have joined after '1986-01-01'.	1						
		<p>SELECT COUNT(*) FROM Worker WHERE GENDER='MALE' AND DOJ > '1986-01-01';</p> <p>OR</p> <p>SELECT * FROM Worker WHERE GENDER='MALE' AND DOJ > '1986-01-01';</p> <p><i>(Any valid query for counting and/or displaying for male workers will be awarded 1 mark)</i></p>							
		(v) SELECT COUNT(*),DCODE FROM WORKER GROUP BY DCODE HAVING COUNT(*)>1;	1/2						
		<table><thead><tr><th><u>COUNT(*)</u></th><th><u>DCODE</u></th></tr></thead><tbody><tr><td>2</td><td>D01</td></tr><tr><td>2</td><td>D05</td></tr></tbody></table> <p><i>(1/2 Mark for correct output)</i></p>	<u>COUNT(*)</u>	<u>DCODE</u>	2	D01	2	D05	
<u>COUNT(*)</u>	<u>DCODE</u>								
2	D01								
2	D05								
		(vi) SELECT DISTINCT DEPARTMENT FROM DEPT;	1/2						
	Ans	<p><u>Department</u></p> <p>MEDIA MARKETING INFRASTRUCTURE FINANCE HUMAN RESOURCE</p> <p><i>(1/2 Mark for correct output)</i></p>							

		(vii) SELECT NAME,DEPARTMENT,CITY FROM WORKER W,DEPT D WHERE W.DCODE=D.DCODE AND WNO<1003;	½									
		<table><tr><td><u>NAME</u></td><td><u>DEPARTMENT</u></td><td><u>CITY</u></td></tr><tr><td>George K</td><td>MEDIA</td><td>DELHI</td></tr><tr><td>RymaSen</td><td>INFRASTRUCTURE</td><td>MUMBAI</td></tr></table> (½Mark for correct output)	<u>NAME</u>	<u>DEPARTMENT</u>	<u>CITY</u>	George K	MEDIA	DELHI	RymaSen	INFRASTRUCTURE	MUMBAI	
<u>NAME</u>	<u>DEPARTMENT</u>	<u>CITY</u>										
George K	MEDIA	DELHI										
RymaSen	INFRASTRUCTURE	MUMBAI										
		(viii) SELECT MAX(DOJ),MIN(DOB) FROM WORKER;	½									
		<table><tr><td><u>MAX(DOJ)</u></td><td><u>MIN(DOB)</u></td></tr><tr><td>2014-06-09</td><td>1984-10-19</td></tr></table> (½Mark for correct output)	<u>MAX(DOJ)</u>	<u>MIN(DOB)</u>	2014-06-09	1984-10-19						
<u>MAX(DOJ)</u>	<u>MIN(DOB)</u>											
2014-06-09	1984-10-19											
		Note:In the out put queries,please ignore the order of rows										
6	(a)	Verify the following using Boolean Laws. X + Y'= X.Y+X.Y'+X'.Y'	2									
	Ans	L.H.S =X + Y' =X.(Y+Y')+(X + X').Y' =X.Y + X.Y' + X.Y' +X'.Y' =X.Y + X.Y' + X'.Y' =R.H.S ORR.H.S =X.Y + X.Y' + X'.Y' =X.(Y + Y')+ X'.Y' =X.1 + X'.Y' =X + X'.Y' =X + Y' =L.H.S										
		(2Marks for any valid verification using Boolean Laws) OR (1Mark for partial correct verification using Boolean Laws)										
	(b)	Draw the Logic Circuit for the following Boolean Expression: (U + V').W' + Z	2									

	Ans																																						
		<p><i>(½ Mark for V' and W')</i></p> <p><i>(½ Mark for $(U+V')$)</i></p> <p><i>(½ Mark for $(U+V').W'$)</i></p> <p><i>(½ Mark for $(U+V').W'+Z$)</i></p>																																					
	(c)	<p>Derive a Canonical SOP expression for a Boolean function F, represented by the following truth table:</p> <table border="1"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>F (A, B, C)</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	A	B	C	F (A, B, C)	0	0	0	1	0	0	1	0	0	1	0	0	0	1	1	1	1	0	0	1	1	0	1	0	1	1	0	0	1	1	1	1	1
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(C)	Ans	<p>$F(A,B,C)=A'B'C'+A'BC+AB'C'+ABC$ OR</p> <p>$F(A,B,C)=\sum(0,3,4,7)$</p>	1																																				
		<p><i>(1Mark for the correct SOPform) OR</i></p> <p><i>(½Mark for writing any two term correctly)</i></p> <p><i>Note:Deduct ½ mark if wrong variable names are used</i></p>																																					
	(d)	<p>Reduce the following Boolean Expression to its simplest form using K-Map:</p> <p>$F(X,Y,Z,W) = \sum(0,1,6,8,9,10,11,12,15)$</p>	3																																				

	Ans	<div data-bbox="422 273 844 598" data-label="Diagram"> </div> <p>OR</p> <div data-bbox="422 693 844 1018" data-label="Diagram"> </div>	
		<p>($\frac{1}{2}$Mark for each of grouping-5 groups $\times \frac{1}{2} = 2\frac{1}{2}$Marks)</p> <p>($\frac{1}{2}$Mark for writing final expression in reduced/minimal/non redundant form as $XY' + Y'Z' + XZ'W' + XZW + X'YZW'$)</p> <p>Note:Deduct $\frac{1}{2}$ mark if wrong variable names are used</p>	
7	(a)	Illustrate the lay out for connecting 5 computer sin a Bus and a Star topology of Networks.	1
	Ans	<p>Bustopology</p>  <p>StarTopology</p> 	
		($\frac{1}{2}$ Mark for drawing each correct layout)	

	(b)		What is a spam mail?	1
	Ans		Spam is the abuse of electronic messaging systems (including most broad cast media, digital delivery systems) to send unsolicited bulk messages indiscriminately.	
			<i>(1 Mark for correct explanation)</i>	
	(c)		Differentiate between ftp and http.	1
	Ans		FTP is a protocol to transfer files over the Internet HTTP is a protocol which allows the use of HTML to browse webpages in the World Wide Web.	
			<i>(1 Mark for any valid differentiation)</i>	
	(d)		Out of the following, which is the fastest (i) wired and (ii) wireless medium of communication? Infrared, Co-axial Cable, Ethernet Cable, Microwave, Optical Fiber	1
	Ans		(i) Wired – Optical Fiber (ii) Wireless – Infrared OR Microwave	
			<i>(½ Mark each for Wired and Wireless medium of communication)</i>	
	(e)		What is Worm? How is it removed?	1
	Ans		A worm is a self-replicating computer program. It uses a network to send copies of itself to other computers on the network and it may do so without any user intervention. Most of the common anti-virus (anti-worm) remove worm.	
			<i>(½ Mark for writing correct meaning of Worm)</i> <i>(½ Mark for correct definition of removing Worm)</i>	
	(f)		Out of the following, which all comes under cybercrime? (i) Stealing away a brand new computer from a showroom. (ii) Getting in someone's social networking account without His consent and posting pictures on his behalf to harass him. (iii) Secretly copying files from server of a call center and selling it to the other organization. (iv) Viewing sites on a internet browser.	1
	Ans		(iii) & (iv)	

		<p>(½ Mark for choosing each of the correct options)Note:</p> <ul style="list-style-type: none">• No marks to be given, if alloptions are there in the answer• ½Mark to be deducted, if one extra option is given along with the correct options																								
(g)	<p>Perfect EduServices Ltd. Is an educational organization.It is planning to setup its India campus at Chennai with its headoffice at Delhi.The Chennai campus has 4 main buildings-ADMIN, ENGINEERING,BUSINESS and MEDIA.</p> <p>You as a network expert have to suggest the best network related solutions for their problems raised in (i)to(iv),keeping in mind the distances between the buildings and other given parameters.</p> <div><div>DELHI</div><div>Head Office</div><div>CHENNAI</div><div>Campus</div><div>ENGINEERING</div><div>ADMIN</div><div>BUSINESS</div><div>MEDIA</div></div> <p>Shortest Distances between various building:</p> <table><tr><td>ADMINtoENGINEERING</td><td>55m</td></tr><tr><td>ADMINtoBUSINESS</td><td>90m</td></tr><tr><td>ADMINtoMEDIA</td><td>50m</td></tr><tr><td>ENGINEERINGtoBUSINESS</td><td>55m</td></tr><tr><td>ENGINEERINGtoMEDIA</td><td>50m</td></tr><tr><td>BUSINESSStoMEDIA</td><td>45m</td></tr><tr><td>DELHIHeadOfficetoCHENNAICampus</td><td>2175km</td></tr></table> <p>NumberofComputersinstalledatvariousbuildingareasfollows:</p> <table><tr><td>ADMIN</td><td>110</td></tr><tr><td>ENGINEERING</td><td>75</td></tr><tr><td>BUSINESS</td><td>40</td></tr><tr><td>MEDIA</td><td>12</td></tr><tr><td>DELHIHeadOffice</td><td>20</td></tr></table>	ADMINtoENGINEERING	55m	ADMINtoBUSINESS	90m	ADMINtoMEDIA	50m	ENGINEERINGtoBUSINESS	55m	ENGINEERINGtoMEDIA	50m	BUSINESSStoMEDIA	45m	DELHIHeadOfficetoCHENNAICampus	2175km	ADMIN	110	ENGINEERING	75	BUSINESS	40	MEDIA	12	DELHIHeadOffice	20	
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	<p>(i)Suggest the most appropriate location of the server inside the CHENNAI campus (out of the 4 buildings), to get the best connectivity for maximum no. of computers. Justify your answer.</p>	1																								

	Ans		ADMIN(due to maximum number of computers) OR MEDIA(due to shorter distance from the other buildings)	
			<i>(1Mark for mentioning Correct building name with reason) OR (½Mark to be deducted for not giving reason)</i>	
			(ii)Suggest and draw the cable layout to efficiently connect various buildings within the CHENNAI campus for connecting the computers.	1
	Ans		Any one of the following <div style="border: 1px solid black; width: 600px; height: 60px; margin: 10px auto;"></div>	
			<i>(1Mark for drawing correct layout)</i>	
			(iii)Which hard ware device will you suggest to be procured by the company to be installed to protect and control the internet used within the campus?	1
	Ans		Firewall OR Router	
			<i>(1Mark for correct Answer)</i>	
			(iv)Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of CHENNAI campus and DELHI Head Office? (a) Cable TV (b) Email (c) Video Conferencing (d) TextChat	1
	Ans		Video Conferencing	
			<i>(1Mark for correct Option/Answer)</i>	