BLUE PRIENT

SUBJECT:- Computer Science

UNIT/TOPIC	1Mks	2Mks	3Mks	4Mks	TOTAL
1) **Programming in C++**	1(4)	2(6)	3(2)	4(2)	30
2) **Data Structure**	-----	2(2)	3(2)	4(1)	14
3) **Database and SQL**	-----	2(2)	----	4(1)	08
4) **Boolean Algebra**	1(1)	2(2)	3(1)	----	08
5) **Communication &Networking**	1(4)	2(1)	-----	4(1)	10
Total	**9**	**13**	**5**	**5**	**70**

Marking Scheme

Ques. 1

a) Free store is a pool of unallocated heap memory given to a program that is used by the program for dynamic allocation during execution.

b) #define is a preprocessor. const is a keyword to declare constant variables.
   (1 mark for each correct definition)

c) Header files- iostream.h and iomanip.h ($^{1/2}$ mark for writing each header file)

d) #include <iostream.h>

```
        class MEMBER
        {
        int Mno;
        float Fees;
        public:
        void Register ( )
        {cin>>Mno>>Fees;}
        void Display( )
        {cout<<Mno<<" : "<<Fees<<endl;}
        };
        void main( )
        {
        MEMBER d;
        d.Register( );
        d.Display( );
        }
```
   ($^{1/2}$ mark for each correction)

e) BAJJAB#-1 (3 marks for correct output)

f) C
   AA
   L L L
   I I I I
   F F F F F
   OOOOOO
   RRRRRRR
   NNNNNNNN
   I I I I I I I I I
   AAAAAAAAAA

   (2 marks for correct output)

g) Ans : Option (iii)######99-@@999 (1 mark for correct answer and 1 mark for writing the reason)

Ques. 2

a) The functions should be inlined only when they are small.Inline functions execute faster but memory penalty is there.We can make a function inline if it a small function and it does not return a value and not having a loop or a switch or a goto statement and it does not contain static variables,and is not a recursive function.   (2 marks for definition)

b)

   i) a) To call Statement 1 - Inter Obj(100);
       b)Function 3 is a destructor, it will   invoke automatically when an object expire from memory. (1/2 Mark for each correct answer)
       ii) Definition for Function 2- Copy constructor
           Inter (Inter & t)
            {
           m=t.m;
            }

c) class Competiton
       {
        int Event_no;
        char Description[30];
        int Score;
       char Qualified;
       char Award(int cutOfScore)
        {
        if (Score>cutOfScore)
            return 'Y';
        else
            return 'N';
        }
       public:
        competition ( )
        {
       Event_No=101;
       strcpy(Description,"State Level");
       Score=50;
       Qualified='N';
       }
       void Input( )
       {
       cin>>Event_No;
       gets(Description);
       cin>> Score;
       int cutScore;
       cout<<"Enter cut of Score\n";
       cin>>cutScore;
       Qualified= Award(cutScore);
       }
       void Show( )
       {cout<< "\nEvent_No"<< Event_No<<"\n Description"<< Description<<"\n Score"<< Score<<"\n Qualified"<< Qualified;}
       };
       (2 Marks for declaring the class correctly, 1 mark for function definition,1 mark for invoking the function Award(int) from input( ))

d)   i) Multiple Inheritance
       ii) void Register( ), void Input( ),void Output( ), void Sitein( ),void Siteout( )
       iii) void Register( ),void Show ( ),void Input( ),void Output( )
       iv) Not possible .there is no relation between class FacetoFace and class Online.
       (1 Mark for each correct answer)

Ques. 3

a) void SORTSCORE(Examinee E[ ],int size)

```
{int i,j;
Examinee temp;
cout<<"\arranging in Descending order\n";
for(i=0;i<size;i++)
    {
    for(j=0;j<size;j++)
    {
    if(E[j].score<E[j+1].score)

        {

        temp=E[j];
        E[j]= E[j+1];
        E[j+1]=temp;
          }
       }
     }
  }
```

b) Total No of rows R=35

No of columns C= 20

$I_r = 0$

$I_c=0$

W=4

  A[i][j]=B+w(c(I-Ir)+(j-Ic))

T[2][2]=B+4(15(2-0)+(2-0)

3000=B+128

B=2872

A[20][5]=2872+4(15(20-0)+(5-0))

    =2872+1220

     =**4092**

Base address =**2872**   Element address= **4092** ($1^{1/2}$ mark for each correct answer)

c) void FindPlayer(Cricket *Front, Cricket *Rear,int PlayerID)

```
{
 int f=0;
 if (Front==NULL)           //  Or (Rear == NULL)
  {
   cout<< "Queue is Empty";
  exit(1);
   }
 while(Front!=NULL)
  {
  If(Front->Pid ==PlayerID)
      {
      cout<<"\n Player ID – "<<Front-> Pid<<"\n Player Name –"<<Front-> Pname
      <<"\n Type – <<Front->Type;
       f=1;
      }
   Front=Front->next;
   }
 if (f==0)
  {cout<<"Sorry  No such Player Found !!!!!\n"}
}
```

(1 mark for writing the function definition & passing the required arguments correctly,[1/2] mark for checking empty condition,[1/2] mark for checking Not found condition, 2 marks for displaying the Player details after searching.)

d)

```
void SumOfAlternate(int B[ ][5],int R,int C)
  {
    int sum=0;
   for(int i=0;i<R;i++)
    {
    for(int j=0;j<C;j++)
      {
        if((i+j)%2==0)
            sum+=B[i][j];
      }

    }
  cout<< "\nSum of Alternate Elements ="<<sum;
  }
```

([1/2] Mark for writing the correct function definition and [1/2] mark for declaring & initializing a variable for storing sum and 1 mark for taking alternate location elements,calculating sum &displaying or returning the result.)

e) (1 mark for showing stack contents in each stage and 1 mark for correct output)

Given Expression is (A+B)*(C^(D-E)+F)-G

Sl.No	Symbol Scanned	Stack Status	Output
1		(	
2	(	((	
3	A	((	A
4	+	((+	A
5	B	((+	AB
6	)	(	AB+
7	*	(*	AB+
8	(	(*(	AB+
9	C	(*(	AB+C
10	^	(*(^	AB+C
11	(	(*(^(	AB+C
12	D	(*(^(	AB+CD
13	-	(*(^(-	AB+CD
14	E	(*(^(-	AB+CDE
15	)	(*(^	AB+CDE-
16	+	(*(+	AB+CDE-^
17	F	(*(+	AB+CDE-^F
18	)	(*	AB+CDE-^F+
19	-	(-	AB+CDE-^F+*
20	G	(-	AB+CDE-^F+*G
21	)		AB+CDE-^F+*G-

Postfix expression is AB+CDE-^F+*G-

Ques. 4.

a) i) Statement 1 – File.seekp(Record*sizeof(PracFile));
   ii) Statement 2 – File.write((char*)&P,sizeof(PracFile));
   ([1/2] Mark each)

b)
```
#include<iostream.h>
#include<process.h> //for exit( )
#include<ctype.h> //for isupper( )
void CountWord( )
{
 ifstream File;
 char word[50];
 int wcount=0,Docount=0;
 File.open("coordinate.txt",|ios::in);
 if(!File)
         {cout<<"Sorry Can't open the file !!!!"; exit(1);}
 while (File)
   {
        File>>word;
        if(isupper(word[0])
               wcount++;
        if(strcmp(word,"Do")==0)
               Docount++;
    }
 cout<<" Total words with capital vowel –"<< wcount<<"Count of 'Do' in file –"<< Docount;
  File.close( );
 }
```

($^{1/2}$ Mark for opening the file correctly.$^{1/2}$ mark for declaring & initializing variables to store count,1 mark for reading word by word from file and counting and displaying the counts.)

c)
```
void PrintDistance( )
{   ifstream File; int f=0;
    File.open("BUS.DAT",ios::binary|ios::in);
    bus B;
    while (File.read(( char*) &B, sizeof(B)))
            {
                    if(B.retdist( ) > 100)
                    {
                     f=1;
                     B. display( );
                    }
            }
        if(f= =0)
          cout<<"\n No such record….";
    File.close( );
}
```

(1 Mark for opening the file correctly.$^{1/2}$ mark for declaring Object of class Bus,1 mark for reading records from file and $^{1/2}$ mark for checking and displaying the record.)

Ques. 5

a) DDL –Data Definition Language –This is a category of SQL commands which are used to creating or defining relations,deleting relations and modifying relations.Eg : Create ,Drop,Alter

DML- Data Manipulation Language -This is a category of SQL commands which are used to manipulate or access data from a table.Eg: Insert,Update,Delete

($^{1/2}$ mark for definition & $^{1/2}$mark for writing any one Eg for each)

b) i) Select * from consumer where Address ='Delhi';
ii) Select * from Stationary where price between 8 and 15.

iii) Select ConsumerName, Address , Company,Price from Consumer, Stationary where
   Consumer. S_ID = Stationary. S_ID ;
iv)Update Stationary set Price =Price + 2;
v) Count
   3
vi)

Company	Max(Price)	MIN(Price)	COUNT(*)
ABC	15	10	2
XYZ	7	6	2
CAM	5	5	1

vii)

ConsumerName	StationaryName	Price
Good Learner	Pencil	5
Write Well	Gel Pen	15
Topper	Dot Pen	10
Write & Draw	Pencil	6
Motivation	Pencil	5

viii)

StationaryName	Price*3
Dot Pen	30
Pencil	18
Eraser	21
Pencil	15
Gel Pen	45

(1 mark each for questions from (i) to (iv) and ½ mark each for questions from (v) to (viii)

Ques.6

a) (A'+B').(A+B)=A'.B+A.B'

L.H.S = (A'+B').(A+B) =A'A+A'B+B'A+B'B
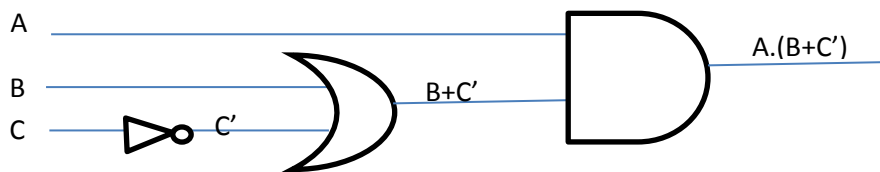   = 1+A'B+AB'+1 (Applying Complementarity Law AA'=1 &BB'=1)
                     = A'B+AB' = R.H.S (Applying Properties of 1)
   (2 marks for the correct derivation with explanation)

b)   A.(B+C')

(1 marks for drawing the circuit diagram and 1 mark for showing the output in each stage)

c) F(X,Y,Z)= $\prod$(1,3,6,7)   SOP = F(X,Y,Z) =$\sum$ (0,2,4,5)
   Canonical SOP Expression is   X'Y'Z'+X'YZ'+XY'Z'+XY'Z
   (1 Mark for writing the SOP expression)

d) $F (X, Y, Z, W) = \Sigma (0,1,3,4,5,7,9,10,11,13,15)$

	Z'W'	Z'W	ZW	ZW'
X'Y'	1	1	1	0
X'Y	1	1	1	0
XY	0	1	1	0
XY'	0	1	1	1

F= W+X'Z'+XY'Z

(1 mark for mapping the given function into K-map, 1 mark for Grouping, 1 mark for the answer)

Ques.7

a) ARPANET is Advanced Research Agency Network, developed by U.S department of Defence. It is the seed of today's internet developed in 1969 and used for connecting different Universities and U.S researchers. It expanded rapidly and formed new high capacity network like NFSnet. (2 marks for correct answer)

b) In electronic communication bandwidth is the width of the range of frequencies that an electronic signal uses on a given transmission medium.
Bps(Bytes per second) ($^{1/2}$ mark for definition & $^{1/2}$ mark for Eg)

c) i) FTP - File Transfer Protocol   (ii) NTP – Network Time Protocol
(1/2 Mark for each correct answer)

d)
i)Cable Layout
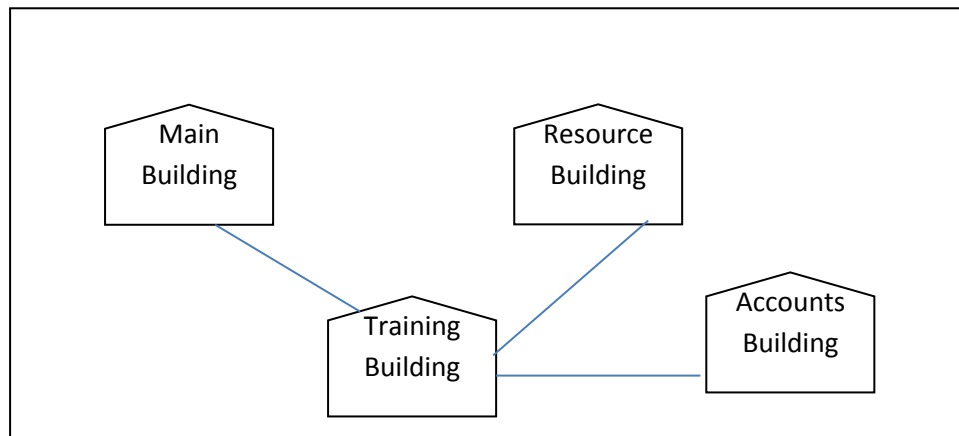
ii)Training Building . According to the 80:20 rule, building having more number of computers should be selected for installing server.

iii) i) Repeater should be placed between Training building and Accounts Building and Training building and Resourse building since the distance is more than 100m.
ii) Hub/Switch should be placed in all the building to connect the computers each other.
iv) Optical Fibre

(1 mark for each correct answer)

e) Cookies are messages that a web server transmit to a website to a web browser so that web server can keep track of the user's activity on a specific website.(1 mark for definition)

f) FLOSS is Free Libre and Open Source Software.It refers to a software which is both free software as well as open source software.(1 mark for definition)

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