

Subjective Assignments For CBSE (XII) Computer Science Aspirants

Q1. Define the term Internet.

Q2. Differentiate between LAN, WAN and MAN.

Q3. Explain the following terms:

- a. HOST
- b. REPEATER
- c. BRIDGE
- d. ROUTER
- e. BRIDGE
- f. GATEWAY
- g. MODEM

Q4. Write in about 50 words the History of Internet.

Q5. What is GIAS.

Q6. What are the two types of accounts of Internet used in major.

Q7. What are the various tools of Internet.

Q8. How does CHATTING differ from EMAIL.

Q9. What are the various services of Internet.

Q10. Write short notes on the following:

- a. GOPHER
- b. MOSAIC
- c. USENET
- d. NEWS GROUPS
- e. WAIS

Q11. Define the following Internet terms:

- a. DNS
- b. EMAIL
- c. COOKIE
- d. JABBER
- e. HTTP

Q12. What is a Web Browser. Name its utility.

Q13. Name any three connecting devices of Internet.

Q14. Name any two Search Engines.

Q15. Differentiate between DOWNLOAD and UPLOAD.

Q16. Write a note of the following:

- a. Internet Security
- b. Public and Private Key
- c. Digital Signatures
- d. Private Virtual Network

17. Define the term Internet. How does communication take place on the Internet.

18. What are the main Hardware and Software requirements for using Internet.

19. Name and explain the various communication devices used for Internet Access.

20. Explain the following:

- (a) Browser
- (b) Web Page
- (c) Website

21. Name any two Browsers available with you.
22. What are the steps required to access the Internet using Explorer.
23. What is an E-Mail. How is to sent through the Internet.
24. Name any four utilities of E-mail.
25. Write in about 100 words about the EMAIL and its procedure using MS Explorer Software.
- 26.(a) What is the significance of Cyber Law?
- (b) Expand the following terms with respect to Networking:
- (i) XML
 - (ii) WWW
 - (iii) WLL
 - (iv) TCP/ IP
- (c) Which of the following units measures the speed with which data can be transmitted from one node to another node of a network? Also, give the expression of the suggested unit.
- (i) KMph
 - (ii) Mbps
 - (iii) MGps
- (d) "Hindustan Connecting World Association" is planning to start their offices in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to set up their head office in New Delhi in three locations and have named their New Delhi offices as "Sales Office", "Head Office" and "Tech Office". The company's regional offices are located at "Coimbatore", "Kolkata" and "Ahmedabad".

A rough layout of the same is as follows:

Approximate distances between these offices as per network survey team is as follows:

Place From	Place To	Distance
Head Office	Sales Office	10 KM
Head Office	Tech Office	70 Meter
Head Office	Kolkata Office	1291 KM
Head Office	Ahmedabad Office	790 KM
Head Office	Coimbatore Office	1952 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Head Office	100
Sales Office	20
Tech Office	50
Kolkata Office	50
Ahmedabad Office	50
Coimbatore Office	50

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following set of their offices:

- Head Office and Tech Office
- Head Office and Coimbatore Office

(ii) Which device will you suggest to be procured by the company for connecting all the computers within each of their offices out of the following devices?

- Modem
- Telephone
- Switch/ Hub

(iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local offices in New Delhi for ver effective and fast communication?

- Ethernet Cable
- Optical Fiber
- Telephone Cable

(iv) Suggest a cable/ wiring layout for connecting the company's local offices located in New Delhi. Also, suggest an effective method/ technology for connecting the company's regional offices at "Kolkata", "Coimbatore" and "Ahmedabad".

CHAPTER 15

SAMPLE TEST PAPERS

OBJECTIVE EXERCISE

[SOLVED & UNSOLVED]

C++

1. Name the combinational characters required for naming an Identifier in C++?
2. What are special symbols in C++ ?
3. Does C++ offer compatibility to lower case and upper case letters ?
4. What are keywords ?
5. Is it required to provide key words in either case, lower or upper ?
6. Name the three types of constants available in C++ ?
7. What are string constants of C++ ?
8. What are numeric constants of C++ ?
9. Explain the integer constants of C++ ?
10. Define Floating Point constants of C++ ?
11. What are Hex constants ?
12. What are Octal Constants ?
13. What are character Constants ?
14. How is an Identifier defined as a char type ?
15. What are non-graphic characters of C++ ?
16. Name the usage of the following backslash characters ?
 [\a](#), [\n](#), [\t](#), [\b](#), [\r](#), [\f](#), [\v](#), [\\](#), [\'](#), [\0](#), [\?](#) .
17. Name the different operators of C++ ?
18. Name the Arithmetic operators with definition ?
19. Define the precedence of execution of arithmetic operators in C++ ?
20. Name and define the assignment operators of C++ ?
21. Define an expression of C++ ?
22. Define the logical operators of C++ ?
23. Explain the Ternary Operator of C++ ?
24. What is an automatic conversion ?
25. What is Type Casting ?
26. Define the three types of statements of C++ ?

27. Define the remark statement of C++ ?
 28. Define the structure of a C++ program ?
 29. Name any two common compilers of C++ ?
 30. Explain the concept of IOSTREAM.H ?
 31. Explain the usage of cout & cin ?
 32. Define a manipulator of C++ ?
 33. Explain the usage of endl and setw manipulators ?
 34. Name the conditional statements of C++ ?
 35. Name the looping statements of C++ ?
 36. Name the break control statements of C++ ?
 37. Explain the usage of IF with an example ?
 38. Explain the usage of IF-ELSE with an example ?
 39. Write a program segment to print the maximum out of entered three numbers ?
 40. What is the output of the following statements :
 - (a) `int i=20;`
`cout<<i<<i++<<+i;`
 - (b) `int i=1,a=3;`
`i=a++;`
`cout<<i;`
 - (c) `int i=3;`
`if (i) cout<<i++;`
`else`
`cout<<i—;`
 - (d) `int x,x=3,y=2;`
`z=—x+y++;`
`cout<<z;`
 - (e) `char ch='a';`
`ch = (ch=='b') ? ch:'b';`
`cout<<ch;`
- [CBSE QUESTION BANK 1998]**
41. Given the values of a, b, c. Evaluate the following (answer whether True/False) :
`(x>=y) | (!(z==y)&&(z<x))`
 - (a) x=10, y=5, z=11
 - (b) x=10, y=10, z=10
 - (c) x=9, y=10, z=2
- [CBSE QUESTION BANK 1998]**
42. Write the equivalent expressions for the following :

$$\text{volume} = 3.1459 \, r \, h / 3$$

43. Suppose A, B and C are integer variable A=3, B=3, C=-5 and X, Y, Z are floating point variables where X=8.8, Y=3.5, Z=-5.2. Determine the value of the following expressions :
- (a) A%C
 - (b) A*B/C
 - (c) (A*C)%B
 - (d) X/Y
 - (e) X/(X+Y)
 - (f) int(X) % int(Y)

[CBSE QUESTION BANK 1998]

- 44. Explain switch statement of C++ ?
- 45. Explain the usage of Break in switch ?
- 46. Explain the default as used with switch ?
- 47. Define the syntax of for loop ?
- 48. Explain the syntax of while ?
- 49. Write a for loop that displays the numbers from 50 to 100 ?
- 50. Define the declaration of a block of statements ?
- 51. Write a while loop to display numbers from 10 to 100 ?
- 52. Name the number of times the loop is executed through 'do' ?
- 53. Explain the format of 'do' loop ?
- 54. Write a Do-while segment to print the sum of first hundred natural numbers?
- 55. Name the control branching statements of C++ ?
- 56. Explain the usage of break ?
- 57. Explain the usage of break with switch structure ?
- 58. Explain the usage of break with while loop ?
- 59. Define the concept of continue ?
- 60. Define the usage of continue with 'for' using an example ?
- 61. Define the usage of 'exit' as a function ?
- 62. Explain the usage of 'goto' as an unconditional control statement of C++?
- 63. Explain 'goto' statement with the help of an example program segment ?
- 64. Define the structure of the function ?
- 65. What is a function prototype ?
- 66. Explain the concept of Function Definition using an example ?

67. Define a function in C++ to input any number (N) and print the sum of all natural numbers from 1 to N.
68. Give the output of the following :
- ```
for(int i=5;i<10;i+2)
cout<<i-2<<endl;
```
69. What is an array ?
70. Where does an array get stored ?
71. Define storage of any ten numbers in an array through an example program ?
72. Define a program segment to assign the vowels in an array ?
73. Write a program to print the sum of any entered ten numbers using arrays?
74. Give the output of the following :
- ```
#include<iostream.h>
#include<iostream.h>
main()
{
    int x,y,z;
    x=y=10;
    z=x%y;
    cout<<z;
    getch();
    return 0;
}
```
75. Give the output of the following program :
- ```
#include<iostream.h>
#include<conio.h>
main()
{
 clrscr(); // Given to clear the screen
 for (int i=1;i<5;i++)
 cout<<i;
 cout<<i;
 getch();
 return 0;
}
```



76. Give the output of the following program :

```
#include<iostream.h>
#include<iostream.h>
main()
{
 clrscr();
 for (int i=1;i<5;++i)
 cout<<i;
 cout<<i;
 getch();
 return 0;
}
```

77. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 clrscr();
 for(i=5;i>0;-- i)
 cout<<i;
 cout<<i;
 getch();
 return 0;
}
```

78. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 clrscr();
 for (int i=5;i>0;-- i)
 {
 cout<<i;
 i=i+1;
 }
 cout<<i;
 getch();
}
```

```
 return 0;
}
```

79. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 int num,a,b,c,d;
 clrscr();
 num = 12;
 for (a=1;a<num;a++)
 {
 b = num%a;
 if (b==0)
 cout<<a<<endl;
 }
 cout<<"Press any key to continue";
 getch();
 return 0;
}
```

80. #include<iostream.h>  
#include<conio.h>  
main()  
{  
 int num,i,b,c,e=0;  
 clrscr(); //used to clear the screen  
 num = 4567;  
 b = num;  
 for (i=0;i<=num;i++)  
 {  
 num=b;  
 b=num/10;  
 c=b\*10;  
 d=num-c;  
 if (num==0) break;  
 cout<<d;  
 }

```
 cout<<endl<<"press any key to exit";
 getch();
 return 0;
 }
```

```
81. #include<iostream.h>
 #include<conio.h>
 main()
 {
 clrscr();
 int a,b;
 a=4;
 b=0;
 int c=0;
 for (b=1;b<=a;b++)
 {
 a=a+b;
 c=c+a;
 cout<<a<<b;

 }
 return 0;
 }
```

```
82. #include<iostream.h>
 #include<conio.h>
 main()
 {
 int a,b,c,d,j,x,i;
 for (i=0;i<=5;i++)
 for (j=1;j<=1;j++)
 {
 cout<<j+1;

 }
 return 0;
 }
```

```
83. #include<iostream.h>
 #include<conio.h>
 void main()
 {
```

```
int a,b,c,d,e;
c=1;
a=5,b=5;
switch(c)
{
 case 1:
 d=a+b;
 break;
 case 2:
 d=a-b;
}
cout<<d;
}
```

84. #include<iostream.h>  
main()  
{  
int a,b,c,d,j,x,i;  
for (i=0;i<=5;i++)  
for (j=1;j<=1;j++)  
{  
cout<<j;  
}  
return 0;  
}

85. #include<iostream.h>  
main()  
{  
int a,b,store=0,c;  
a=6;  
for (b=2;b<=a-1;b++)  
{  
c=a%b;  
if (c!=0)  
store = store + b;  
}  
cout<<store;  
return 0;

```
}
86. #include<iostream.h>
 main()
 {
 int a,b,store=0,c;
 a=6;
 for (b=2;b<=a-1;b++)
 {
 c=a+b;
 if (c%2 == 0)
 store = store + b;
 }
 cout<<store;
 return 0;
 }
```

```
87. #include<iostream.h>
 main()
 {
 int a,b,store=0,c;
 a=6;
 for (b=2;b<=a-1;b++)
 {
 c=a+b;
 if (c%2==0)
 store = store + c;
 }
 cout<<store;
 return 0;
 }
```

```
88. #include<iostream.h>
 main()
 {
 long aa,b,store=5,c;
 aa=6;
 for (b=1;b<=aa+2;b++)
 {
```

```
 c=aa-b;
 if (c%2==0)
 store = store - c;
 }
 cout<<store;
 return 0;
}
```

89. `#include<iostream.h>`

`main()`

`{`

`int num,act,i;`

`num=3;`

`act=5;`

`for (i=1;i<=num;i++)`

`{`

`act = act*i;`

`}`

`cout<<act;`

`return 0;`

`}`

90. What is the purpose of the following functions : `fabs()`, `abs()` and `pow()`

91. Indicate the name of the header file required for the following : `supper()`, `strlen()`, `cout`, `sqrt()`, `pow()`

92. The number[5] address of the array has which storage value of the cell.

93. Indicate an expression of C++ involving a logical operator which is true if the amount is 100 and balance is greater than 500.

94. Give the output of the following program :

`#include<iostream.h>`

`#include<conio.h>`

`int fact(int a);`

`main()`

`{`

`int b,f;`

`b=4;`

`f=fact(b);`

`cout<<f;`

`getch();`

```
 return 0;
}
int fact(int a)
{
 int s = 1;
 for (int i=1;i<=a;i++)
 s=s*i;
 return s;
}
```

95. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
int sum (int a);
main()
{
 int b,f;
 b=5;
 f=sum(b);
 cout<<f;
 getch();
 return 0;
}
int sum(int a)
{
 int s=0;
 for (int i=1;i<=a;i++)
 s=s+1;
 return s;
}
```

96. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
int repeat(int a);
main()
{
 int b;
```

```
 cout<<endl;
 b=6;
 repeat(b);
 getch();
 return 0;
 }
 int repeat(int a)
 {
 for (int i=1;i<=a;i++)
 cout<<a;
 return 0;
 }
```

97. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
#include<ctype.h>
void len(char boy[10]);
main()
{
 int b;
 char bboy[10];
 for (int i=0;i<10;i++)
 bboy[i]='s';
 cout<<endl;
 len(bboy);
 getch();
 return 0;
}
void len (char boy[10])
{
 int l;
 l=strlen(boy);
 cout<<l;
 cout<<endl;
 for (int j=0;j<10;j++)
 {
```



```
 char a = toupper(boy[j]);
 cout<<a;
 }
 return ;
}
```

98. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
#include<ctype.h>
main()
{
 int b;
 char bboy[10];
 cout<<endl;
 bboy[0]='s',bboy[1]='h',bboy[2]='r';
 bboy[3]='u',bboy[4]='t',bboy[5]='i';
 len(bboy);
 getch();
 return 0;
}
void len(char boy[10])
{
 int l;
 l=strlen(boy);
 cout<<l;
 for (int i=0;i<=l;i++)
 {
 char a = toupper(boy[i]);
 cout<<a;
 }
 return;
}
```

99. (a) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
```

```
#include<ctype.h>
main()
{
 int b;
 char bboy[10];
 clrscr();
 bboy[0]='d',bboy[1]='e',bboy[2]='f',bboy[3]='g';
 len(bboy);
 getch();
 return 0;
}
void len(char boy[10])
{
 int l,v=0;
 l=strlen(boy);
 for (int i=0;i<=l;i++)
 {
 if ((boy[i]=='a') || (boy[i]=='e') || (boy[i]=='i') || (boy[i]=='o' || (boy[i]=='u'))
 v=v+1;
 }
 cout<<l<<v;
 return;
}
```

(b) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 int number[10],a,b,c,d;
 clrscr();
 for(int i=0;i<10;i++)
 {
 number[i]=i+i;
 }
 clrscr();
 for(int j=0;j<9;j++)
 {
```

```
 for(int k=j+1;k<10;k++)
 {
 if (number[j]>number[k])
 {
 a=number[j];
 number[j]=number[k];
 number[k]=a;
 }
 }
 }
 cout<<endl;
 for(i=0;i<10;i++)
 cout<<number[i]<<"\t";i++;
 getch();
 return 0;
}
```

(c) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 int number[10],a,b,c,d;
 clrscr();
 for(int i=0;i<10;i++)
 {
 number[i]= i*i;
 }
 cout<<"\a\a";
 clrscr();
 for(int j=0;j<10;j++)
 {
 for(int k=0;k<9;k++)
 {
 if (number[k]>number[k+1])
 {
 a=number[k];
 number[k]=number[k+1];
```

```
 number[k+1]=a;
 }
}
for(i=0;i<10;i++)
 cout<<number[i]<<"\t";
getch();
return 0;
}
```

(d) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<math.h>
main()
{
 int number[10],a,b,c,d;
 clrscr();
 for(int i=0;i<5;i++)
 {
 number[i]= pow (i,2);
 }
 cout<<"\a\a";
 clrscr();
 for(int j=0;j<5;j++)
 {
 for(int k=0;k<4;k++)
 {
 if (number[k]<number[k+1])
 {
 a=number[k];
 number[k]=number[k+1];
 number[k+1]=a;
 }
 }
 }
 for(i=0;i<5;i++)
 cout<<number[i]<<"\t";
```

```
getch();
return 0;
}
```

(e) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<math.h>
main()
{
 int item[5],a,b,c,d;
 clrscr();
 for(int i=0;i<5;i++)
 {
 item[i]= pow (i,2);
 }
 cout<<"\a\a";
 clrscr();
 for(int j=0;j<5;j=j+2)
 {
 for(int k=0;k<4;k++)
 {
 if (item[k]<item[k+1])
 {
 a=item[k];
 item[k]=item[k+1];
 item[k+1]=a;
 }
 }
 }
 for(i=0;i<5;i++)
 cout<<item[i]<<"\t";
 getch();
 return 0;
}
```

(f) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
```

```
int main()
{
 int val=8;
 clrscr();
 cout<<'\\n'<< (val = 9);
 getch();
 return 0;
}
```

(g) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
 int value = 98;
 clrscr();
 cout<<'\\n'<< (value == 9);
 getch();
 return 0;
}
```

(h) Give the output of the following program :

```
#include <iostream.h>
#include <conio.h>
int main()
{
 clrscr();
 int one_char;
 one_char = 'a';
 cout<<(char)one_char << '\\n';
 cout << (int) one_char+10;
 getch();
 return 0;
}
```

(i) Give the output of the following program :

```
#include <iostream.h>
#include <conio.h>
int main()
{
```

```
clrscr();
char *one_char;
one_char = "internet";
cout<<(char)one_char[1]<< '\n';
cout << (int) one_char[2]+10;
getch();
return 0;
}
```

(j) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
 int number= 5;
 int total = 0;
 int count = 0;
 clrscr();
 while (number != 0)
 {
 number=number-1;
 if(number == 0)
 cout << "Thank you. Ending routine.\n";
 else count++;
 total += number;
 }
 cout << total << '\n';
 cout << count << '\n';
 cout << total / count << '\n';
 getch();
 return 0;
}
```

(k) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
 clrscr();
```

```
int number, total;
for (number = 2, total = 2; number < 6; total += number,
 number++);
cout<<number<<endl<<total<<endl;
cout<<number;
getch();
return 0;
}
```

- (l) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
int a=0;
clrscr();
char *name;
name="Internet Browsing";
for(a=0;a<=8;a++)
cout<<name[a+1];
cout<<endl;
cout<<name[a];
cout<<endl<<(int)name[a]-1;
getch();
return 0;
}
```

- (m) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
void arm(int);
clrscr();
int num;
num=191;
arm(num);
getch();
return 0;
}
```



```
}
void arm(int n)
{
 int number,sum=0,dg,dgg,digit;
 number=n;
 while(n>0)
 {
 dg=n/10;
 dgg=dg*10;
 digit=n-dgg;
 cout<<digit+digit<<endl;
 sum=sum+digit*digit*digit;
 n=n/10;
 }
 cout<<digit<<endl<<sum;
}
```

(n) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 void arm(int);
 clrscr();
 int num;
 num=153;
 arm(num);
 getch();
 return 0;
}
void arm(int n)
{
 int number,sum=0,dg,dgg,digit;
 number=n;
 while(n>0)
 {
 dg=n/100;
 dgg=dg*10;
 digit=n-dgg;
 cout<<digit+digit<<endl;
 sum=sum+digit*digit*digit;
 n=n/10;
 }
 cout<<digit<<endl<<sum;
}
```

```
digit=n-dgg;
cout<<digit<<endl;
sum=sum+digit*digit*digit;
n=n/10;
}
cout<<digit;
}
```

(o) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
main()
{
clrscr();
char *name;
int l;
name="SHANA";
l=strlen(name);
cout<<l<<endl<<(int) name[l-2];
cout<<endl;
cout<<name[l-3];
getch();
return 0;
}
```

(p) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<string.h>
main()
{
clrscr();
char *name;
int l=0;
name="dheeraj@lw1.vsnl.net.in";
l = strlen(name);
l=l-1;
```

```
cout<<endl;
for(int i=l;i>=0;i=i-2)
{ cout<<name[i];}
cout<<endl;
cout<<i;
cout<<endl;
cout<<name[i+4];
cout<<endl;
getch();
return 0;
```

```
}
```

(q) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<string.h>
#include<process.h>
main()
{
 clrscr();
 char *name,*name1;
 int l=0;
 name="Windows98";
 l = strlen(name);
 cout<<endl;
 for (int asc=90;asc>=65;asc--)
 {
 for(int i=0;i<l;i++)
 {
 if (name[i]==char(asc) || (name[i]==char(asc+32)))
 cout<<name[i];
 }
 }
 cout<<endl;
 getch();
 return 0;
```

}

- (r) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
 int num=0, i=0,barr[10],a=0;
 clrscr();
 num=10;
 int nnum=num;
 while (num>0)
 {
 a=num%2;
 i=i+1;
 barr[i]=a;
 num=num/2;
 }
 cout<<endl;
 for (int k=i;k>=1;k--)
 cout<<barr[k];
 cout<<endl<<endl;
 getch();
 return 0;
}
```

- (s) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
void main()
{
 clrscr();
 for (int i=1;i<=5;i++)
 {
 if ((i%2)==0)
 cout<<i+i<<"\n";
 else
 cout<<i-1<<endl;
 }
 cout<<i;
```

```
getch();
}
```

(t) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
#include<process.h>
#include<stdio.h>
#include<string.h>
main()
{
 clrscr();
 char *name,ans;
 int l=0,count=0,max=0;
 name="Multimedia";
 l = strlen(name);
 cout<<endl;
 for(int a=0;a<l;a++)
 {
 for (int b=0;b<l;b++)
 {
 if (name[a]==name[b] && name[a]!=' ')
 count = count+1;
 }
 if (max<count)
 {
 max=count;
 ans=name[a];
 }
 }
 count=0;
 cout<<ans<<" "<<max<<endl;
 getch();
 return 0;
}
```

(u) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
```

```
#include<stdio.h>
#include<string.h>
main()
{
 clrscr();
 char *name;
 int l=0,c=0;
 name="the computers in the city of the nawabs";
 l = strlen(name);
 cout<<endl;
 for(int i=0;i<=l;i++)
 {
 if ((name[i]=='t') && (name[i+1]=='h') && ((name[i+2])=='e'))
 c=c+1;}
 cout<<endl;
 cout<<c;
 getch();
 return 0;
}
```

(v) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<process.h>
void main()
{
 clrscr();
 int i,a;
 a=9;
 for (i=2;i<=a-1;i++)
 {
 if ((a%i)==0)
 cout<<a<<" "<<i;
 }
 getch();
}
```

100. What is a Structure ? How is it declared ?

101. Write a program segment to declare a structure result with name, rollnum and percent as members.
102. Explain the definition of a structure variable.
103. How do you access the structure members ?
104. Explain the initialization of members within a structure.
105. What are user defined structures.
106. How do you use typedef for declaring structures ?
107. Define the concept of an Enumerated Data Type.
108. What values shall be taken for members of the following enum function :  
enum choice = {e-mail,www,Internet}
109. How can you change the Default Ordinal Types ?
110. Define the symbolic constants of the enumerated type.
111. Write the definition for the structure (applicant) with the following data:  
Applicant Name, Code Number, Sex(M/F), Date of Birth (Day, Month, Year), Martial Status (Single/Married).
112. State the validity of the following :  
enum boolean {false,true};  
and  
enum boolean {true,false};
113. Write a statement that declares an enumerated data type called fruits with the values :  
apple, orange, mango, bannana.
114. Define a class and an object.
115. Explain the definition of a Class ?
116. How are objects declared as a Class.
117. Define the accessing of class variables.
118. How are objects referenced with the member functions ?
119. What is a constructor ?
120. What is a destructor ?
121. Explain the usage of constructor and a destructor.
122. Define Function Overloading ?
123. What is Polymorphism ?
124. Define Inheritance ?
125. Name the difference types of Inheritance ?
126. Name the three visibility modes ?
127. Define the usage of Public visibility mode ?

128. Define the usage of Private visibility mode ?
129. Define the usage of Protected visibility mode ?
130. Define the concept of Single Inheritance ?
131. Define the concept of Multilevel Inheritance ?
132. What is a Pointer ?
133. Explain the declaration of a pointer
134. What are Dynamic allocation operators
135. Define the new operator
136. Define the delete operator
137. What is a Reference Variable
138. Define a function call by reference
139. Define a function return by reference
140. Define an array ?
141. Define a Stack ?
142. Define a Queue ?
143. What is a circular queue ?
144. What is a file ?
145. What is a record ?
146. What are the basic file organisations ?
147. What are the modes conducted through manipulation of data file.
148. Name the two streams of file handling in C++.
149. Explain the usage of open(), close(), put() and get() functions of C++?
150. Define the usage of write() and read() functions.
151. Name the different format options used with the open statement. Also indicate the purpose of each.
152. Write program segment to open a file "test.dat" for reading only.
153. Write program segment to open a file "test.dat" for writing only.
154. Write program segment to open a file "test.dat" for both reading and writing.
155. Write program segment to open a file "test.dat" for adding.
156. Write the usage of good() ?
157. Write the usage of eof() ?
158. Write the usage of fail() ?
159. Write the usage of bad() ?
160. How is get() different from getline() ?



## SQL Commands

Give the SQL statement to do the following :

161. To create a table STUDENT with Roll, Name, Age and Marks.

162. To create a table with the following structure as DEPART.

Deptcd Char(3)

Deptname Char(10)

City Char(20)

163. To create a table with the following structure as BABY.

name char(20);

164. Create a table called PROJECT with the following columns :

ProjID NUMBER(4)

ProjDesig CHAR(20)

ProjStartDT DATE

ProjEndDT DATE

BudgetAmt NUMBER(7)

MaxNoStaff NUMBER(2)

**[CBSE Question Bank**

**1998]**

165. To display the student table with columns in the following order : name, class, marks.

166. To display the student table with columns of all name with marks <40.

167. To count the number of students who scored less than 40 marks of the table student.

168. To find the highest marks of the student table, as per the following format:  
Mr/Ms. <name> has secured highest marks as <marks>

169. To list the names in ascending order of marks, with fields of rollno, names and marks.

170. To list the names in descending order of marks, with fields of names and marks from the student table :

171. To insert the following data into the student table :

111, "Yogita", 89.

172. To delete all records from student table with marks = 25.

173. To increase the marks of all students by 10, for name = "Shruti".

174. To count the total number of records in the table student.

Write SQL commands for the following taking in view the following table as SCHOOL:

| No. | Name     | Age    | Department | Sex   |          |   |
|-----|----------|--------|------------|-------|----------|---|
| 1   | Ankit    | 45     | Comp.Sc.   | M     |          |   |
| 2   | Sumit    | 32     | History    | M     |          |   |
| 3   | Amit     | 22     | Geog       | M     |          |   |
| 4   | Suchitra | 23     | Maths      | F     |          |   |
| 5   |          | Ankita |            | 22    | Hindi    | F |
| 6   |          | Shruti |            | 21    | Comp.Sc. |   |
|     |          |        |            |       |          | F |
| 7   |          | Raksha |            | 22    | Hindi    | F |
| 8   |          | Priya  | 33         | Maths | F        |   |

175. To show all information about the members of the Hindi Department.

176. To list the names of female members who are in Hindi department.

177. To list names of all members with the ascending order of their ages.

178. To display member's name, age and department name of males.

179. To count the number of members with age >21.

180. To insert a new row in the SCHOOL table with the following data :

9, "Pinto", 31, "Maths", "M"

Give the output of the following, considering the above table :

181. SELECT COUNT (DISTINCT AGE) FROM SCHOOL;

182. SELECT MAX(AGE) FROM SCHOOL WHERE SEX = "M";

183. SELECT AVG(AGE) FROM SCHOOL WHERE SEX ="M";

184. SELECT SUM(AGE) FROM SCHOOL WHERE SEX="M";

Consider the following table OFFICE and frame queries for the following:

| S.No. | Emp.Name | Age | Department | Sex | B-Pay |
|-------|----------|-----|------------|-----|-------|
| 1     | Ankit    | 45  | Comp.Sc.   |     | M     |
| 2390  |          |     |            |     |       |
| 2     | Sumit    | 32  | History    |     | M     |
| 2323  |          |     |            |     |       |
| 3     | Amit     | 22  | Geog       | M   | 5654  |
| 4     | Suchitra | 23  | Maths      | F   | 5644  |
| 5     | Ankita   | 22  | Hindi      | F   | 2322  |
| 6     | Shruti   | 21  | Comp.Sc.   |     | F     |
| 3323  |          |     |            |     |       |
| 7     | Raksha   | 22  | Hindi      | F   | 4321  |
| 8     | Priya    | 33  | Maths      |     | F     |
| 2388  |          |     |            |     |       |

185. Find the Department for Employee Ankita.

186. Display the records of all employees who belong to the Hindi department.
187. Display the detailed table for all employees having Basic Pay greater than 3000.
188. Display the list of employees who belong to the Maths department in ascending order of ages.
189. Display the list of employees who belong to the Hindi department in descending order of ages.
190. Find the total number of records present in the table Office.
191. Find the total number of employees greater than 30 years of age.
192. Find the total number of employees Belonging to the the Computer Science department.
193. Find the total of Basic Pay of the employees :
194. Find the maximum of the Basic Pay being paid to the employees.
195. Modify the record having name as "Shruti", by increasing the Basic Pay by Rs. 100.
196. Modify all the records by increasing the Basic Pay by Rs. 200.
197. Insert a new record with the following information :  
9      Poonam      30      Maths      F      2348
198. Delete the record having Employee name ="Ankit".
199. Delete all the records belonging to the Hindi Department.

### **Boolean Algebra :**

200. Define Binary logic ?
201. What is a Boolean Operation ?
202. Define a boolean function ?
203. Define a Boolean Expression ?
204. Name the three primary and secondary operators of Boolean Algebra ?
205. State any four postulates of boolean algebra ?
206. Define Idempotent Law ?
207. Define Absorptive Law ?
208. Define Involution Law ?
209. What is De Morgan's Theorem ?
210. State the principle of duality ?
211. State the steps required to calculate the dual of any expression ?
212. State the dual of :  $A+A' = 1$
213. What is a Boolean Function ?

214. Define the Sum Of Products format of a boolean expression ?
215. Define the Product of Sums format of a boolean expression ?
216. What is a Karnaugh map ?
217. Draw the truth table of NAND gate ?
218. Define the XNOR gate ?
219. What is a Half Adder ?
220. What is a Full Adder ?
221. Differentiate between an Encoder and a Decoder ?
222. What are Universal Gates ? Name any two Universal Gates ?
223. Define the working of a XOR gate ?
224. What is a Multiplexer ?
225. What is a Multivibrator ?
226. What is a Minterm ?
227. What is a Maxterm ?
228. What is a Canonical Sum of Products ?
229. What is a Canonical Product of Sums ?
230. State the total number of combinations possible for a three input gate ?

**Sample Paper – 2008**  
**Class – XII**  
**Subject – Computer Science**

- Please check that this question paper contains 7 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 7 questions.
- Please write down the serial number of the question before attempting it.

**Time allowed: 3 hours**

**Maximum Marks: 70**

***Instructions:***

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

1. (a) Write the names of the header files to which the following belong : 1
- (i) random( )                      (ii) fabs( )
- (b) What is variable scope? What is the difference between Local and Global scope? Explain with an example. 2
- (c) Identify the errors in the following program. 2
- ```
#include<iostream.h>
void main()
{
    int n = 44;
    int *ptr = &n;
    ++(*ptr);
    int *const cptr = &n;
    ++(*cptr);
    ++cptr;
    const int kn=88;
    const int *ptrc = &kn;
    ++(*ptrc);
    ++ptrc;
    const int *const cptrc =&kn;
    ++(*cptrc);
    ++cptrc;
}
```
- (d) Give the output of the following program segment (Assume all

required header files are included in the program) 2

```
void main()
{
    char *name,*name1;
    int l=0;
    name="Windows98";
    l = strlen(name);
    cout<<endl;
    for (int asc=90;asc>=65;asc--)
    {
        for(int i=0;i<l;i++)
        {
            if (name[i]==char(asc) || (name[i]==char(asc+32)))
            cout<<name[i];
        }
    }
    cout<<endl;
}
```

(e) Write the output of the following program: 2

```
#include<iostream.h>
int func (int &x, int y=10)
{
    if(x%y==0) return ++x; else return y--;
}
void main()
{
    int p=20,q=23;
    q=func(p,q);
    cout<<p<<" "<<q<<endl;
    p=func(q);
    cout<<p<<" "<<q<<endl;
    q=func(p);
    cout<<p<<" "<<q<<endl;
}
```

(f) What will be the output of the following program: 2

```
Void main()
{
    int b;
    char bboy[10]; cout<<endl;
    bboy[0]='s',bboy[1]='h',bboy[2]='r';
    bboy[3]='u',bboy[4]='t',bboy[5]='i';
    len(bboy);
}
void len(char boy[10])
{
    int l;
```

```
l=strlen(boy); cout<<l;
for (int i=0;i<=l;i++)
{   char a = toupper(boy[i]);
    cout<<a;
}
```

2. (a) How does inheritance influence the working of constructors and destructors? 2

- (b) Define a class BALANCED_MEAL in C++ with following description: 4

Private Members:

Access number	Integer
Name of Food	String of 25 characters
Calories	Integer
Food type	String
Cost	Float

AssignAccess() Generates random numbers
between 0 to 99 and return it.

Public Members

- A function INTAKE() to allow the user to enter the values of Name of Food, Calories, Food type cost and call function AssignAccess() to assign Access number.
 - A function OUTPUT() to allow user to view the content of all the data members, if the Food type is fruit.
- (c) Consider the following declarations and answer the questions given below: 4

```
class Mydata
{   protected:
    int data;
    public:
    void Get_mydata(int);
    void Manip_mydata(int);
    void Show_mydata(int);
    Mydata( );
    ~Mydata( );
};

class Personal_data
{
    protected:
    int data1;
    public:
    void Get_personaldata(int);
    void Show_personaldata(int);
    Mydata1( );
    ~Mydata1( );
};
```

```
class Person: public Mydata, Personal_data
{
    public:
    void Show_person(void);
    person( );
    ~person( );};
```

- i) How many bytes will be required by an object belonging to class Person?
 - ii) Which type of inheritance is depicted in the above example?
 - iii) List the data members that can be accessed by the member function Show_person()
 - iv) What is the order of constructor execution at the time of creating an object of class Person?
- (d) Answer the questions (i) and (ii) after going through the following class.

```
class Exam
{
    char Subject[20];
    int Marks;
    public :
    Exam() // Function 1
    {
        strcpy(Subject, "Computer");
        Marks = 0; }
    Exam(char P[ ]) // Function 2
    {
        strcpy(Subject, P);
        Marks=0; }

    Exam(int M) // Function 3
    {
        strcpy(Subject,"Computer");
        Marks = M; }
    Exam(char P[ ], int M) // Function 4
    {
        strcpy(Subject, P);
        Marks = M; }
};
```

- (i) Which feature of the Object Oriented Programming is demonstrated using Function 1, Function2, Function 3 and Function 4 in the above class Exam?
 - (ii.) Write statements in C++ that would execute Function 3 and Function 4 of class Exam.
- 3** (a) Write a function in C++ which accepts an integer array and its size as arguments/parameters and assigns the elements in to two dimensional array of integers in the following format: **4**

If the array is **1,2,3,4,5,6** ,then the resultant 2D array should be :

1 2 3 4 5 6

1 2 3 4 0 0
 1 2 3 0 0 0
 1 2 0 0 0 0
 1 0 0 0 0 0
 1 0 0 0 0 0

- (b) Translate, following infix expression into its equivalent postfix expression $A * (B + D) / E - F - (G + H / K)$ **2**
- (c) If an array B[11][8] is stored as column wise and B[2][2] is stored at 1024 and B[3][3] at 1084. Find out the base address, size of an element and address of B[5][3]. **4**
- (d) Give the necessary declarations for a queue containing float type numbers; write a user defined function in C++ to insert a float type number in the queue. Use linked representation of queue. **4**
- (e) Write a function in C++ to print the sum of all the values which are divisible by 10 or 20 present in a two dimensional array passed as the argument to the function. **3**

- 4** (a) Assuming the given definition of class HOTELDATA, write functions in C++ to perform the following: **3**

```
class HOTELDATA
{
    int room;
    char name[20];
    int duration;
public:
    void checkins();
    void display(); };
```

Checkins() function to allow user to enter the data of customers (objects of class HOTELDATA) and write them to a binary file "HOTEL" and display() function allows us to read from the binary file and display on the screen.

- (b) Observe the program segment given below carefully, and answer the question that follows : **1**

```
class Member
{
    int Member_no;
    char Member_name[20];
public :
    void enterdetails();
    void showdetails();
    int RMember_no() {return Member_no; }
};
void Update(Member NEW)
```

```
{
fstream File;
File.open("MEMBER.DAT",ios::binary|ios::in|ios::out);
Member OM;
int Recordsread = 0, Found = 0;
while (!Found && File.read((char*)&OM, sizeof(OM)))
{
Recordsread ++;
if (NEW.RMember_no() == OM.RMember_no())
{
_____//Missing Statement
File.write((char*)&NEW, sizeof(NEW));
Found = 1;
}
else
File.write((char*)&OM, sizeof(OM));
}
if (!Found)
cout<<"Record for modification does not exist";
File.close();
}
```

If the function Update () is supposed to modify a record in file MEMBER.DAT with the values of Member NEW passed to its argument, write the appropriate statement for **Missing Statement** using seekp () or seekg (), whichever needed, in the above code that would write the modified record at its proper place.

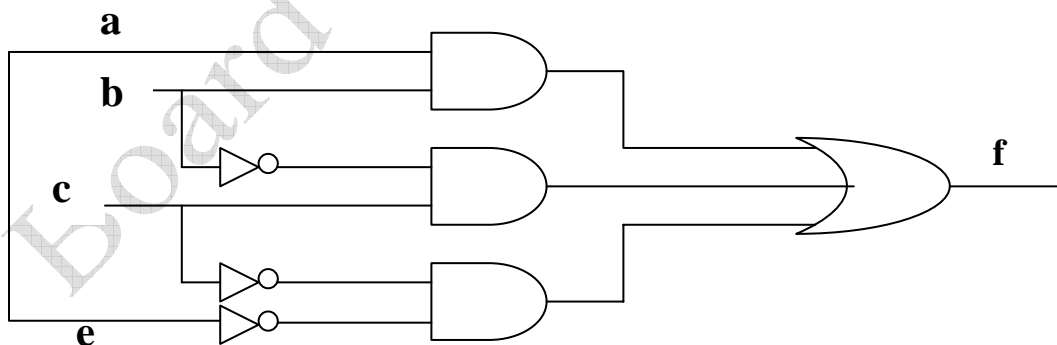
- (c) Write a user defined function in C++ to read the content from a text file "Mybook.txt", count and display the number of word "*the*" present in the file.

5. (a) What do you understand by the terms **Cardinality** and **Degree** of a relation in relational database? 2
- (b) Given the following **LAB** table, write SQL command for the questions (i) to (iii) and give the output of (iv). 6

LAB

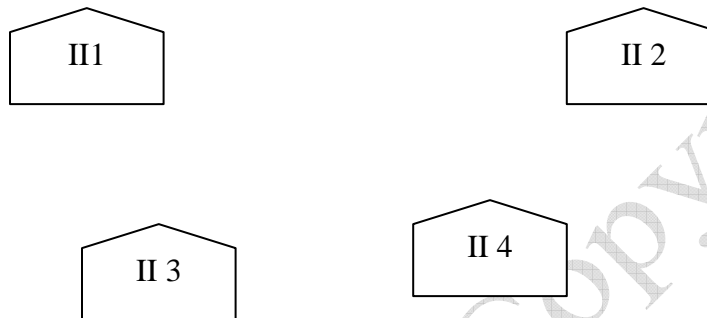
No	ItemName	CostPerItem	Quantity	Dateofpurchase	Warranty	Operational
1	Computer	60000	9	21/5/96	2	7
2	Printer	15000	3	21/5/97	4	2
3	Scanner	18000	1	29/8/98	3	1
4	Camera	21000	2	13/10/96	1	1
5	Switch	8000	1	31/10/99	2	1
6	UPS	5000	5	21/5/96	1	4
7	Router	25000	2	11/1/2000	2	5

- (i) To select the ItemName, which are within the Warranty period till present date.
- (ii) To display all the itemName whose name starts with "C".
- (iii) To list the ItemName in ascending order of the date of purchase where quantity is more than 3.
- (iv) Give the output of the following SQL commands:
- (a) select min(DISTINCT Quantity) from LAB;
- (b) select max(Warranty) from LAB;
- (c) select sum(CostPerItem) from Lab;
- 6 (a) State and verify De-Morgan's law in Boolean Algebra. 2
- (b) Interpret the following logical circuit as Boolean expression. 2



- (c) Reduce the following Boolean expression using K-map. 3
- $F(A, B, C, D) = \Sigma(0, 1, 2, 4, 5, 7, 8, 9, 10, 11, 14)$
- (d) Prove that $XY + YZ + YZ' = Y$ 1

- 7 (a) Explain function of hub and router. **1**
- (b) Expand the following terms: **2**
- (i) URL (ii) ISP (iii) DHTML (iv) CDMA
- (c) Differentiate between message switching and packet switching **1**
- (d) Indian Industries has the following four buildings in Chennai.
Distance between various wings is given below:



Wing II 1 to Wing II 3	70m
Wing II 1 to Wing II 2	20m
Wing II 1 to Wing II 4	115m
Wing II 3 to Wing II 4	30m
Wing II 2 to Wing II 3	25m

Number of Computers

Wing II 1	35
Wing II 2	25
Wing II 3	80
Wing II 4	60

- i. Suggest suitable CABLE LAYOUTS FOR THESE BUILDINGS. **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.

Sample Paper – 2008
Class – XII
Subject – Computer Science

Basic theory (4 Marks)

1. What do you understand by procedural programming paradigm?
2. What do you understand by object oriented programming paradigm?
3. Explain all the features of OOPs with their implementation in C++.
4. Why main function is so special in C++. Give at least two reasons.
5. Write two advantages of using #include compiler directive.
6. Differentiate between a run time error and syntax error. Give one example of each.
7. Illustrate the concept of function overloading with the help of an example.
8. Why is a destructor function required in classes? illustrate with the help of an example.
9. Illustrate the use of this pointer with the help of an example.
10. What is the use of a constructor function in a class ? Give a suitable example for a constructor function in a class.
11. Illustrate the concept of function overloading with the help of an example.
12. Differentiate between a constructor and destructor function.
13. Illustrate the use of “self referencing structures” with the help of an example.
14. What is the purpose of a header file in a program?
15. What do you understand about a base class & a derived class ? if a base class and a derived class each include a member function with the same name and arguments , which member function will be called by the object of the derived class if the scope operator is not used ?
16. What do you understand about a member function ? how does a member function differ from an ordinary function ?
17. Differentiate between call by value & call by reference with a suitable example.
18. Differentiate between global & local variable with a suitable example.
19. Differentiate between nested class & inheritance with a suitable example.
20. Differentiate between default & copy constructor with a suitable example.
21. What are advantages of OOPs over procedural programming?
22. Illustrate the use of #define in C++ to define a macro.
23. Define Multilevel & multiple inheritance in context of OOP with suitable example.
24. Illustrate the use of inline function in C++ with the help of a suitable example.
25. What is a default constructor ? how does it differ from destructor?
26. Differentiate between a data type struct & a data type class in C++.
27. Explain the concept constructor overloading with a suitable example.
28. What do you understand by visibility modes in class derivations ? what are these modes.
29. What do you understand by Syntax Error, logical Error & Run time error.
30. Define the term #define & typedef with suitable example.

Error (2or 3 marks)

1. `#include<iostream.h>`

```
void main()
{
    const MAX=0;
    int a,b;
    cin<<a>>b;
    if(a>b) MAX=a;
    for(x=0,x<MAX;x++) cout<<x;
}

2. #include<iostream.h>
Main()
{
    int ch=9,sch=90;
    char S[2,2];
    if ch<=9
        cout<<ch;
    for(int x=0;x<2;x++)
        for(int y=0;y<2;y++)
        {
            if(y==0) S[x][y]='A';
            else
                cout>>S[x][y];
        }
    getch(); }

3. class X
{
    public:
        int a,b;
        void int(void)
        {
            a=b=0;
        }
        int sum(void);
        int square(void);
};

int sum(void)
{
    return a+b;
}

int square(void)
{
    return sum() *sum();
}
```

```
4. include<iostream.h>
    void main()
    {
        int R; W=90;
        while W>60
        {
            R=W-50;
            switch(W)
            {
                20:cout<<"Lower range"<<endl;
                30: cout<<"Middle Range"<<endl;
                20: cout<<"Higher Range"<<endl;
            }
        }
    }
```

```
5. #include<iostream.h>
    main()
    {
        int x[5],*y,z[5];
        for(i=0;i<5;i++)
        {
            x[i]=I;
            z[i]=i+3;
            y=z; x=y;
        }
    }
```

```
6. class ABC
    {
        int x=10;
        float y;
        ABC(){ y=5; }
        ~AB?C() {}
    };
    void main()
    {
        ABC a1,a2;
    }
```

```
7. void main()
    {
        const int i=20;
        const int *const ptr=&i;
        (*ptr)++;
        int j=15;
```

```
ptr = &j;
}
8. #include(iostream.h)
void main()
{
    int X[]={ 60,50,30,40},Y; count=4;
    cin>>Y;
    for(i=count-1;i>=0;i--)
    switch(i)
    {
        case 0;
        case 2: cout<<Y*Y[i]<<endl; break;
        case 1;;
        cae 3: cout>>Y+X[i];
    }
}
9. struct group
{
    int x1,x2;
}
void main()
{
    g1,g2 group;
    cin>>g1.x1<<g2.x2;
    g2=g1;
    cout<<g2.x2<<g2.x1<<endl;
    2+=g1.x1;
    cout<<g1.x1<<g1.x2;
}
10. structure swimmingclub
{
    int mem number;
    char mamname[20]
    char memtype[]="LIG";
};
void main()
{
    swimmingclub per1,per2;
    cin<<"Member Number";
    cin>>memnumber.per1;
    cout<<"\n Member name";
    cin>>per1.membername;
    per1.memtype="HIG";
```



```
per2=per1;
cin<<"\n Member number "<<per2.memnumber;
cin<<"\n Member name "<<per2.memname;
cin<<"\n Member number "<<per2.memtype;
}
```

11. #include<iostream.h>

CLASS STUDENT

```
{
    int admno;
    float marks;
    public :
    STUDENT()
    {
        admno=0;
        marks=0.0;
    }
    void input()
    {
        cin>>admno;
        cin>>marks;
    }
    void output()
    {
        cout<<admno;
        cout<<marks;
    }
}

void main()
{
    STUDENT s;
    input(s);
}
```

12. #include<iostream.h>

```
void main()
{
    struct STUDENT
    {
        char stu_name[20];
        char stu_sex;
        int stu_age=17;
    }student;
    gets(stu_name);
    gets(stu_sex);
}
```

}

Output (5 marks)

1.

```
#include<iostream.h>
void display(char *s)
{
    for(int x=0;s[x]>0;x++)
    {
        for(int y=0;y<=x;y++)
            cout<<s[y];
        cout<<endl;
    }
}
void main()
{
    char *t="LAND";
    display(t);
}
```
2.

```
#include<iostream.h>
int &max (int &x,int &y)
{
    if(x>y)
        return (x);
    else
        return (y);
}
void main()
{
    int A=10,B=13;
    max(A,B)=-1;
    cout<<"A= "<<A<<"B= "<<B<<endl;
    max(B,A)=7;
    cout<<"A= "<<A<<"B= "<<B<<endl;
}
```
3.

```
#include<iostream.h>
#include<conio.h>
int main()
{
    char string[]="Pointers and strings";
    cout<<*(&string[2])<<endl;
    cout.write(string+5,15).put('\n');
    cout<<*(&string[3])<<"\n";
    return 0;
}
```

```
}
4. #include<iostream.h>
   int a=10;
   void main()
   {
       void demo(int &,int,int*);
       int a=20,b=5;
       demo(&a,&a,&b);
       cout<<::a<<a<<b<<endl;
   }
   void demo(int &x,int y,int *z)
   {
       a+=x;
       y*=a;
       *z=a+y;
       cout<<x<<y<<*z<<endl;
   }
5. char *S="ObjecT";
   int L=strlen(S);
   for(int C=0;C<L;C++)
       if(islower(S[C]))
           S[C]=toupper(S[C]);
       else
           if(C%2==0)
               S[C]='E';
           else
               S[C]=tolower(S[C]);
   cout<<"New message :"<<S;

6. #include<iostream.h>
   void Execute(int &x,int y=200)
   {
       int temp=x+y;
       x+=temp;
       if(y!=200)
           cout<<temp<<" "<<x<<" "<<y<<endl;
   }
   void main()
   {
       int a=50,b=20;
       Execute(b);
       cout<<a<<" "<<b<<endl;
       Execute(a,b);
   }
```

```
        cout<<a<<" "<<b<<endl;
    }
7. #include<iostream.h>
   void print(char *p)
   {
       p="Pass";
       cout<<"\n Value is "<<p<<endl;
   }
   void main()
   {
       char *q="Best Of luck";
       print(q);
       cout<<"\n New value is "<<q;
   }
8. char *s="GOODLUCK";
   for(int x=strlen(s)-1;x>0;x--)
   {
       for(int y=0;y<=x;y++) cout<<s[y];
       cout<<endl;
   }
9. #include<iostream.h>
   int a=3;
   void demo(int x, int y,int &z)
   {
       a+=x+y;
       z=a+y;
       y+=x;
       cout<<x<<" "<<y<<" "<<z<<endl;
   }
   void main()
   {
       int a=2,b=5;
       demo(a,a,b);
       cout<<a<<" "<<a<<" "<<b<<endl;
       demo(a,a,b);
   }
10. #include<iostream.h>
    int max(int &x,int &y,int &z)
    {
        if(x>y &&y>z)
        {
            y++;
            z++;
        }
    }
```

```
        return x;
    }
    else
        if(y>x)
            return y;
        else
            return z;
    }
void main()
{
    int a=10,b=13,c=8;
    a=max(a,b,c);
    cout<<a<<b<<c<<endl;
    b=max(a,b,c);
    cout<<+a<<+b<<+c<<endl;
}

11. void main()
{
    int a=32,*X=&a;
    char ch=65,&cho=ch;
    cho+=a;
    *X+=ch;
    cout<<a<<','<<ch<<endl;
}

12. #include<iostream.h>
struct point
{
    int x,y;
};
void show(point p)
{
    cout<<p.x<<','<<p.y<<endl;
}
void main()
{
    point U={0,10},V,W;
    V=U;
    V.x+=0;
    W=V;
    U.y+=10;
    U.x+=5;
    W.x-=5;
    show(U);
}
```

```
        show(V);
        show(W);
    }
13. void main()
    {
        int x[]={10,20,30,40,50};
        int *p,**q;
        int *t;
        p=x;
        t=x+1;
        q=&t;
        cout<<*p<<","<<**q<<","<<*t++;
    }
14. class state
    {
        char *statename;
        int size;
        public:
        state()
        {
            size=0;
            statename=new char[size+1];
        }
        void display() { cout<<statename<<endl; }
        state(char *s)
        {
            size=strlen(s);
            statename=new char[size+1];
            strcpy(statename,s);
        }
        void replace(state &a, state &b)
        {
            size=a.size+b.size;
            delete statename;
            statename=new char[size+1];
            strcpy(statename,a.statename);
            strcat(statename,b.statename);
        }
    };
void main()
{
    char *temp="Delhi";
    state state1(temp),state2("mumbai"),state3("Nagpur"),S1,S2;
    S1.replace(state1,state2);
```

```
S2.replace(S1,state3);
S1.display();
S2.display();
}
15. void main()
{
    long NUM=1234543;
    int f=0,s=0;
    do{
        int rem=NUM%10;
        if(rem%2==0)
            f+=rem;
        else
            s+=rem;
        NUM/=10;
    }while(NUM>0);
    cout<<f-s;
}
```

Classes & constructor

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

```
class Exam
{
    int year;
    public :
        Exam(int y) { year=y; }
        Exam(Exam &t);
}
```

- (i) Create an object, such that it invokes constructor 1.
(ii) Write complete definition for constructor 2.
2. Define a class named Housing in C++ with the following descriptions :

private members

reg_no	integers (Ranges 10-1000)
name	char array
type	character
cost	float

public members

- function Read_data() to read an object of housing type.
- function display() to display the details of an object.
- function draw_nos() to choose and display the details of 2 houses selected randomly from an array of 10 objects of type Housing. Use random function to generate the registration no with reg_no from the array.

3. Define a class named Cricket in C++ with the following descriptions :

private members

Target_scope	int
Overs_bowled	int
Extra_time	int
Penalty	int

cal_panalty() a member function to calculate penalty as follows :

if Extra_time <=10 , penalty =1
if Extra_time >10 but <=20, penalty =2
otherwise, penalty =5

public members

a function extradata() to allow user to enter values for
target_score,overs_bowled,extra_time.

a function dispdata() to follow user to view the contents of all data
members.

4. Define a class named Directory in C++ with the following descriptions :

private members

docunames	string (documents name in directory)
freespace	long (total number of bytes available in directory)
occupied	long (total number of bytes available in directory)

public members

newdocuentry() a function to accept values of docunames,freespace
& occupied from user

retfreespace() a function that return the value of total kilobytes
available. (1 KB=1024 b)

showfiles() a function that displays the names of all the
documents in directory.

5. Define a class named Publisher in C++ with the following descriptions :

private members

Id	long
title	40 char
author	40 char
price , stockqty	double
stockvalue	double
valcal()	A function to find price*stockqty with double as

return type

Public members

- a constructor function to initialize price , stockqty and stockvalue as 0
- Enter() function to input the idnumber , title and author
- Takestock() function to increment stockqty by N(where N is passed as argument to this function) and call the function valcal() to update the stockvalue().

- sale() function to decrease the stockqty by N (where N is sale quantity passed to this function as argument) and also call the function valcal() to update the stockvalue
 - outdata() function to display all the data members on the screen.
6. Define a class named Serial in C++ with the following descriptions :

private members

serialcode	int
title	20 char
duration	float
noofepisodes	integer

Public members

- a constructor function to initialize duration as 30 and noofepisodes as 10.
- Newserial() function to accept values for serialcode and title.
- otherentries() function to assign the values of duration and noofepisodes with the help of corresponding values passed as parameters to this function.
- dispdata() function to display all the data members on the screen.

7. Considering the following specifications :

Structure name	data	type	size
Name	first	char array	40
	mid	char array	40
	last	char array	60
Phone	area	char array	4
	exch	char array	4
	numb	char array	6
Class name	Data	Type	
P_rec	name	Name	
	phone	Phone	

Member functions:

- Define constructor (outside the class P_rec) that accepts the values of data members from the user.
- Define the display_rec (outside the class P_rec) that shows the current values .

Declare structures in C++ for Name and Phone . Declare the class P_rec.

8. Define a class **Competition** in C++ with the following descriptions:

Data Members

Event_no	integer
Description	char(30)
Score	integer
qualified	char

Member functions

A constructor to assign initial values Event_No number as 101, Description as “State level” Score is

50 , qualified ‘N’.

Input()

To take the input for event_no, description and score.

Award(int)

To award qualified as ‘Y’, if score is more than the cutoffscore

passed as

argument to the function else ‘N’.

Show()

To display all the details.

9. Declare a class **bank** to represent bank account of 10 customers with the following data members: name of depositor, account number, type of account(s for savings and c for current account), balance amount. The class also contains the following member functions:

(a) To initialize data members.

(b) To deposit money

(c) To withdraw money after checking minimum balance (say 1000)

(d) To display the data members on screen.

Inheritance

Q1. Answer the questions (i) to (iv) based on the following:

class PUBLISHER

```
{
    class Pub[12];
    double Turnover;
protected:
    void Register();
public:
    PUBLISHER();
    void Enter ();
    void Display();
};
```

class BRANCH

```
{
    char CITY[20] ;
protected:
    float Employees ;
public:
    BRANCH() ;
    void Haveit();
    void Giveit();
};
```

class AUTHOR : private BRANCH, public Publisher

```
{
    int Acode;
    char Aname[20];
    float Amount;
public:
    AUTHOR();
    void Start();
};
```

```
void Show(); };
```

(i) Write the names of data members, which are accessible from objects belonging to class AUTHOR.

(ii) Write the names of all the members functions which are accessible from objects belonging to class BRANCH.

(iii) Write the names of all the members which are accessible from member functions of class

AUTHOR

(iv) How many bytes will be required by an object belonging to class AUTHOR?

(v) Is enter() is accessible through the object of Author

Q2. Answer the following question (i) to (iv) based on following code:

```
class World
{
    int H;
    protected
    int s;
    public:
    void INPUT(int);
    void OUTPUT();
    class Country : private WORLD
    {
        int T;
        protected
        int U;
        Public :
        void INDATA(int, int);
        void OUTDATA();
    };
    class STATE : Public COUNTRY
    {
        int M;
        public :
        void DISPLAY(void);
    };
};
```

(i) Name the base class and derived class of the class COUNTRY.

(ii) Name the data member that can be accessed from function DISPALAY()

(iii) Name the member functions, which can be accessed from the objects of class STATE.

(iv) IS the member function OUTPUT() accessible by the objects of the class COUNTRY ?

Q3. Answer the questions (i) to (iv) based on the following class declaration:

```
class Medicine
{
    char category[10];
    char Date_of_Manufacture[10];
    char Date_Of_Expiry[10];
protected:
    char company[20];
public:
    int x,y;
    Medicine();
    void Enter();
    void Show();
};
class Tablet :protected Medicine
{
    protected:
        char tablet_name[30];
        char volume_label[20];
        void disprin();
    public:
        float price;
        Tablet();
        void enterdet();
        void showdet();
};
class PainReliver : public Tablet
{
    int Dosage_units;
    long int tab;
    char effects[20];
protected:
    I      int use_within_Days;
public :
    PainReliver()
    void enterpr();
    showpr();
};
```

- i) How many bytes will be required by an object of class Drug and an object of class PainReliver respectively.
- ii) Write names of all the data members which are accessible from the object of class PainReliver.

iii) Write names of all member functions which are accessible from objects of class PianReliver.

iv) Write the names of all the data members which are accessible from the functions enterpr().

Q4. Consider the following declarations and answer the questions given below: [4]

```
class Animal
{
    int leg;
protected:
    int tail;
public:
    void INPUT (int );
    void OUT ( );
};
class wild : private Animal
{
    int Non_veg;
protected:
    int teeth;
Public:
    void INDATA (int, int )
    void OUTDATA( );
};
class pet : public Animal
{
    int veg;
public:
    void DISP (void);
};
```

- (i) Name the base class and derived class of the class wild.
- (ii) Name the data member(s) that can be accessed from function DISP ().
- (iii) Name the member function(s), which can be accessed from the objects of class pet.
- (iv) Is the member function OUT() accessible by the objects of the class wild?

Q5. Answer the questions (i) to (iv) based on the following code:

```
class vehicle
{
    int wheels;
protected:
    int passenger;
public:
    void inputdata();
    void outputdata();
};
```

```
class heavyvehicle : protected vehicle
{
    int diesel_petrol;
protected:
    int load;
public:
    void readdata(int, int);
    void writedata();
};
class bus : private heavyvehicle
{
    char make[20];
public:
    void fetchdata();
    void displaydata();
};
```

- i) Name the base class and derived class of heavyvehicle class.
 - ii) Name the data member(s) that can be accessed from the function displaydata().
 - iii) How many bytes will be required by an object of vehicle and heavyvehicle classes respectively?
 - iv) Is the member function outputdata() accessible to the objects of the class heavyvehicle?
- Q6. Consider the following C++ declaration and answer the questions given below:

```
class A
{
    void any();
protected:
    int a,b;
    void proc();
public:
    A( );
    void get( );
    void put( );
};
class B:protected A
{
    int c,d;
protected:
    int e,f;
    void get2( );
public:
    B( );
    void put2( );
};
```

```
class C: private B
{
    int p;
protected:
    int q;
    void get3();
public:
    void show3();
};
```

- (a) Name all the member functions which are accessible by the objects of class C.
- (b) Name all the protected members of class B
- (c) Name all the data members which are accessible from member functions of class C
- (d) How many bytes does an object belonging to class C require?
- (e) Which class constructor will be called first at the time of declaration of an object of class C
- (f) Is the member function proc() which can be accessed from the objects of class C
- (g) Name the base class and derived class of class B
- (h) Name all the protected members of class C

Functions with array , Searching & sorting (6 or 7 marks)

1. Write UDF in C++ which accepts an integer array and its size as arguments/ parameters and assign the elements

into a 2 D array of integers in the following format :

if the array is 1,2,3,4,5

The resultant 2D array is given below

1 0 0 0

1 2 0 0

1 2 3 0

1 2 3 4

1 2 3 4 5

2. Write UDF in C++ to print the row sum and column sum of a matrix.
3. Write UDF in C++ to find a name from a list of names using binary search method.
4. Write UDF in C++ to insert an element in a one-dimensional sorted array in such a way that after insertion the array remain sorted.
5. Write UDF in C++ to delete a name from a list of names.
6. Write UDF in C++ to sort an array in ascending order using bubble sort.
7. Write UDF in C++ to sort an array (storing names) in ascending order using insertion sort.
8. Write UDF in C++ to sort an array in ascending order using Selection sort.
9. Suppose A, B, C are the array of integers having size m, n, m+n respectively .The elements of array A appear in ascending order, the elements of array B appear in descending order. Write a UDF in C++ to produce third array C after merging arrays A and B in ascending order. Take the arrays A, B and C as argument to the function.
10. Write a function findsort(), to find whether the given integer Array arr[10] is sorted in ascending order or descending order or is not in order. The function should return "A" for ascending , "D" for descending and "N" for no order.

11. Write a function in C++ which accepts an integer array and its size as arguments/parameters and exchanges the values of first half side elements with the second half side elements of the array.
example : if the array is 8,10,1,3,17,90,13,60 then rearrange the array as 17,90,13,60,8,10,1,3
 12. Write a function in C++ which accepts an integer array and its size as arguments/parameters and exchanges the values at alternate locations .
example : if the array is 8,10,1,3,17,90,13,60 then rearrange the array as 10,8,3,1,90,17,60,13
 13. Write a function in C++ which accepts an integer array and its size as arguments/parameters and reverse the contents of the array without using any second array.
 14. Write a function in C++ which accepts an integer and a double value as arguments/parameters. The function should return a value of type double and it should perform sum of the following series :
$$x - x^2/3! + x^3/5! - x^4/7! + x^5/9! \dots \text{upto } n \text{ terms}$$
 14. Assume an array E containing elements of structure employee is required to be arranged in descending order of salary. Write a C++ function to arrange the same with the help of bubble sort , the array and its size is required to be passed as parameters to the function. Definition of structure Employee is as follows :

```

struct employee
{
    int Eno;
    char name[25];
    float salary;
};

```
 15. Given two arrays of integers X and Y of sizes m and n respectively . Write a function named MERGE() which will produce a third array Z , such that the following sequence is followed .
 - (i) All odd numbers of X from left to right are copied into Z from left to right.
 - (ii) All even numbers of X from left to right are copied into Z from right to left.
 - (iii) All odd numbers of Y from left to right are copied into Z from left to right.
 - (ii) All even numbers of Y from left to right are copied into Z from right to left.
- Address calculation in 2D array (2 or 4 marks)**
1. An Array Val[1..15][1..10] is stored in the memory with each elements requiring 4 bytes of storage. If the base address of array Val is 1500, determine the location of Val [12][9] when the array Val is stored (i) row wise (ii) column wise.
 2. A 2-d array defined as A[4..7, -1..3] requires 2 words of storage space for each element. calculate the address of A[6,2], given the base address as 100, also calculate the address of A[7,0] If the array is stored in row major order
 3. If an array B[11][8] is stored as column wise and B[2][2] is stored at 1024 and B[3][3] at 1084. Find out the base address, size of an element and address of B[5][3].
 4. An array ARR[35][15] is stored in the memory along the row with each of its element occupying 4 bytes. Find out the base address and the address of an element ARR[20][5], if the location ARR[2][2] is stored at the address 3000.

5. An array $S[40][30]$ is stored in the memory along the row with each of the element occupying 4 bytes, find out the memory location for the element $S[15][5]$, if an element $s[20][10]$ is stored at memory location 5700
6. An array $ARR[10][20]$ is stored in the memory with each element occupying 2 bytes of space. Assuming the base address of ARR to be 800, compute the address of $ARR[9][11]$, when the array is stored as :

i) Row wise

ii) Column wise

Prefix , post fix , infix notation (2 marks)

1. Evaluate the following postfix expression using a stack and show the Contents of stack after execution of each operation:

- (i) 50,40,+, 18,14,-,4,*,+
- (ii) 100,40,8,+,20,10,-,+,*
- (iii) 5,6,9,+,80,5,*,-,/
- (iv) 120,45,20,+,25,15,-,+,*
- (v) 20,45,+,20,10,-,15,+,*
- (vi) TRUE,FALSE, TRUE FALSE, NOT, OR, TRUE , OR,OR,AND

2. Give postfix form of the following expression:

- (i) $A*(B+(C+D)*(E+F)/G)*H$
- (ii) $A+[(B+C)*(D+E)*F]/G$
- (iii) $A*(B+D)/E-F-(G+H/K)$
- (iv) $((A-B)*(D/E))/(F*G*H)$
- (v) $(True \ \&\& \ false) \ || \ !(false||true)$

3. Write the equivalent infix expression for :

- i. 10,3,*,7,1,-,*,23,+
- ii. /+a*bc-c*db
- iii. abc*+cdb*-/

Stack & Queue (6 or 7 marks)

- Q1. class stack

```
{
    int data[10];
    int top;
    public:
    Stack() { top=-1;}
    void push ( ); // to push an element into the stack
    void pop ( ) ; // to pop an element into the stack
    void display( );// to display all the elements from the stack
};
```

complete the class with all function definition.

- Q2. Write a function in C++ to perform insert operation in dynamically allocated Queue containing names of students.

- Q3. Write a function in C++ to perform push operation in a dynamically allocated stack containing admission number of students. Also declare the relevant class/ structure and pointers.

Q4. Write a function in C++ to perform a DELETE operation in a dynamically allocated queue considering the following description:

```
Struct Node
{
    float U,V;
    Node *Link;
};
class QUEUE
{
    Node *Rear, *Front;
    Public:
    QUEUE() { Rear =NULL; Front= NULL;}
    Void INSERT ();
    Void DELETE ();
    ~QUEUE ();
}
```

Q5. Write a function in C++ to perform a PUSH operation in a dynamically allocated stack considering the following :

```
Struct Node
{
    int X,Y;
    Node *Link;
};
class STACK
{
    Node * Top;
    Public:
    STACK() { TOP=NULL;}
    Void PUSH();
    Void Pop();
    ~STACK();
};
```

Q6. Define function stackpush() to insert nodes and stackpop() to delete nodes, for a linklist implemented stack having the following structure for each node:

```
Struct Node
{
    char name[20];
    int age;
    Node *Link;
};
class STACK
{
    Node * Top;
    Public:
    STACK() { TOP=NULL;}
    Void stackpush();
    Void stackpop();
}
```

```
~STACK();
```

```
};
```

Q7. Consider the following portion of a program which implements passengers Queue for a bus.

Write the definition of function Insert , to insert a new node in the queue with required information.

```
Struct Node
```

```
{    float U,V;  
    Node *Link;
```

```
};
```

```
class QUEUE
```

```
{    Node *Rear, *Front;  
    Public:  
    QUEUE() { Rear =NULL; Front= NULL;}  
    Void INSERT ();  
    Void DELETE ();  
    ~QUEUE ();
```

```
};
```

Q8. Give the necessary declaration of a linked list implemented queue containing float type values . Also write a user defined functions in C++ to add and delete a float type number in the queue.

File handling (6 or 7 marks)

1. Write a function in C++ to read the content from a text file STORY.TXT, count and display the number of alphabets present in it.
2. Write a function in C++ to read the content from a text file NOTES. TXT, count and display the number of blank spaces present in it.
3. Assuming the class EMPLOYEE given below, write functions in C++ to perform the following:-

- (i) Write the objects of EMPLOYEE to binary file.
- (ii) Reads the objects of EMPLOYEE from binary file and display them on screen.

```
Class EMPLOYEE
```

```
{  
    int ENC;  
    char ENAME[0];  
    PUBLIC:  
    Void GETIT(){ cin>> ENO;gets(ENAME);}  
    Void SHOWIT() { cout>> ENO<<ENAME;<<endl; }  
};
```

4. Assuming the class STOCK, write functions in C++ to perform following:

- (i) Write the objects of STOCK to binary file.
- (ii) Reads the objects of STOCK from binary file and display them on screen.

```
Class STOCK
```

```
{
```

```
        int ITNO;
        char ITEM[10];
    PUBLIC:
        Void GETIT() { CIN>> ITNO; gets(ITEM);}
        Void SHOWIT() { cout<<ITNO<< " " <<ITEM<<endl ;}
};
```

5. Consider the class declaration
Class BUS

```
{
    int bus_no;
    char destination[20];
    float distance;
    PUBLIC:
        void read(); // read the data from file
        void Write(); // read the data from user and store to the file .
        void show(); // show the data on screen
};
```

Complete the member functions definitions.

6. Consider the following class declaration:
Class FLIGHT

```
{
    int flight_no;
    char destination[20];
    float distance;
    PUBLIC:
        void INPUT(); // read from user
        void Write_File(); // write the data to file
        void OUTPUT(); // read from file & show on screen
};
```

Compute the member functions definitions.

7. Write a C++ program, which reads one line at a time from the disk file TEST . TXT , and displays it to a monitor. Your program has to read all the contents of the file. Assume the length of the line not to exceed 80 characters. You have to include all the header files if required.
8. Following is the structure of each record in a data file named "Colony.dat"

```
struct Colony
{
    char colony_code[10];
    char colony_name[10];
    int no_of_people;
};
```

Write a function to update the file with a new value of No_of_people. The value of colony_code and no_of_people are read during the execution of the program.

9. Assuming a binary file FUN.DAT is containing objects belonging to a class LAUGHTER(as defined below). Write a user defined function in C++ to add more objects belonging to class LAUGHTER at the bottom of it.

```
Class LAUGHTER
{
    int idno;
    char Type[5];
    char Desc[255];

    PUBLIC:
    void Newentry(){ cin>> Idno; gets(Type); gets(Desc);}
    void Showonscreen() { cout<<Idno<<" "<<Type<<endl<<Desc<<endl;}
};
```

10. Assuming that a text file named TEXT1.TEXT already contains some text written into it, write a function named vowelwords(), that reads the file TEXT1.TEXT and creates a new file named TEXT2.TEXT, which shall contain only those words from the file TEXT1.TEXT which does not start with an uppercase vowel(i.e, with 'A','E','I','O','U'). FOR example, if the file TEXT1.TXT

contains.

Carry umbrella and Overcoat when it Rains

then the file TEXT2.TXT shall contain

Carry when it Rains.

11. Differentiate between read and get function of istream class.

12. Write a C++ program, which initializes a string variable to the content. "Anil is a great teacher but unfortunately it kills all its pupils. Harimohan" and output the string one character at a time to the disk file OUT.TXT. You have to include all the header files if required.

13. A text file named "report.txt" exists on a disk. Write a program to create its copy named "Finerep.txt", which should be in small letters but the first letter of the file and first alphabetic character following a full stop should be in uppercase.

14.. Write a function in C++ to display the data for a particular book name from a binary file "BOOK.DAT", assuming the binary file is contained the objects of the following class:

```
class BOOK
{
    int Bno; char Title[20];
    PUBLIC:
    int Rbno(){return Bno;}
    void Enter(){cin>>Bno;gets(Title);}
    void Display(){cout<<Bno<<Title<<endl;}
    char * rename() { return Title; }
};
```

15 . Write a function in c++ to copy all the lines from file text1.text into text2.txt which is starting from 'A' letter. Assuming that each and every line does not exceed from 50 characters.

SQL 6 marks)

Q1.

Table : SchoolBus

Rtno	Area_oveder	Capacity	Noofstudents	Distance	Transporter	Charges
1	Vasant kunj	100	120	10	Shivamtravels	100000
2	Hauz Khas	80	80	10	Anand travels	85000
3	Pitampura	60	55	30	Anand travels	60000
4	Rohini	100	90	35	Anand travels	100000
5	Yamuna Vihar	50	60	20	Bhalla Co.	55000
6	Krishna Nagar	70	80	30	Yadav Co.	80000
7	Vasundhara	100	110	20	Yadav Co.	100000
8	Paschim Vihar	40	40	20	Speed travels	55000
9	Saket	120	120	10	Speed travels	100000
10	Jank Puri	100	100	20	Kisan Tours	95000

- To show all information of students where capacity is more than the no of student in order of rtno.
- To show area_covered for buses covering more than 20 km., but charges less then 80000.
- To show transporter wise total no. of students traveling.
- To show rtno, area_covered and average cost per student for all routes where average cost per student is - charges/noofstudents.
- Add a new record with following data:
(11, "Moti bagh",35,32,10," kisan tours ", 35000)
- Give the output considering the original relation as given:
 - select sum(distance) from schoolbus where transporter= " Yadav travels";
 - select min(noofstudents) from schoolbus;
 - select avg(charges) from schoolbus where transporter= " Anand travels";
 - select distinct transporter from schoolbus;

Q2.

TABLE : GRADUATE

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV.
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP. Sc.	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CEHMISTRY	55	II

7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP. Sc.	62	I
10	VIKAS	400	MATHS	57	II

- (a) List the names of those students who have obtained DIV 1 sorted by NAME.
- (b) Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.
- (c) To count the number of students who are either PHYSICS or COMPUTER SC graduates.
- (d) To insert a new row in the GRADUATE table:
11,"KAJOL", 300, "computer sc", 75, 1
- (e) Give the output of following sql statement based on table GRADUATE:
- Select MIN(AVERAGE) from GRADUATE where SUBJECT="PHYSICS";
 - Select SUM(STIPEND) from GRADUATE WHERE div=2;
 - Select AVG(STIPEND) from GRADUATE where AVERAGE>=65;
 - Select COUNT(distinct SUBJECT) from GRADUATE;
- (f) Assume that there is one more table GUIDE in the database as shown below:

Table: GUIDE

MAINAREA	ADVISOR
PHYSICS	VINOD
COMPUTER SC	ALOK
CHEMISTRY	RAJAN
MATHEMATICS	MAHESH

- g) What will be the output of the following query:

SELECT NAME, ADVISOR FROM GRADUATE, GUIDE WHERE SUBJECT=MAINAREA;

Q3. Write SQL command for (i) to (vii) on the basis of the table SPORTS

Table: SPORTS

Student NO	Class	Name	Game1	Grade	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C

12	7	Kamal	Swimming	B	Football	B
13	7	Venna	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Atheletics	C

- (a) Display the names of the students who have grade 'C' in either Game1 or Game2 or both.
- (b) Display the number of students getting grade 'A' in Cricket.
- (c) Display the names of the students who have same game for both Game1 and Game2.
- (d) Display the games taken up by the students, whose name starts with 'A'.
- (e) Assign a value 200 for Marks for all those who are getting grade 'B' or grade 'A' in both Game1 and Game2.
- (f) Arrange the whole table in the alphabetical order of Name.
- (g) Add a new column named 'Marks'.

Q4.

Employees

Empid	Firstname	Lastname	Address	City
010	Ravi	Kumar	Raj nagar	GZB
105	Harry	Waltor	Gandhi nagar	GZB
152	Sam	Tones	33 Elm St.	Paris
215	Sarah	Ackerman	440 U.S. 110	Upton
244	Manila	Sengupta	24 Friends street	New Delhi
300	Robert	Samuel	9 Fifth Cross	Washington
335	Ritu	Tondon	Shastri Nagar	GZB
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris

EmpSalary

Empid	Salary	Benefits	Designation
010	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
441	28000	7500	salesman

Write the SQL commands for the following :

- To show firstname,lastname,address and city of all employees living in paris
- To display the content of Employees table in descending order of Firstname.
- To display the firstname,lastname and total salary of all managers from the tables Employee and empsalary , where total salary is calculated as salary+benefits.
- To display the maximum salary among managers and clerks from the table Empsalary.

Give the Output of following SQL commands:

- Select firstname,salary from employees ,empsalary where designation = 'Salesman' and Employees.empid=Empsalary.empid;
- Select count(distinct designation) from empsalary;
- Select designation, sum(salary) from empsalary group by designation having count(*) >2;
- Select sum(benefits) from empsalary where designation ='Clerk';

Theory file Handling , SQL , Networking

- Difference between
 - text file and binary file.
 - ios::app and ios::out
 - ios::ate and ios::app
 - ifstream and ofstream
 - get and getline function
 - getc and getline function
 - read and write
- Write two member functions belonging to fstream , ifstream and ofstream class.
- Write two functions belonging to I/O error handling in files.

4. Explain tellg and tellp , seekg and seekp functions
5. Define in 20 words only : alternate key ,attribute , candidate keys, cardinality and degree of a table ,foreign key ,data independence, primary key, relation , tuple, Views ,Normalization , Un-normalized form (UNF)1NF, 2NF,3NF and 4NF
6. What is DDL and DML
7. Define in 20 words only : transmission media , hackers , crackers ,Web browser, cookies, network security,firewall ,telnet, repeater ,bridge,router ,gateway,modem,cyber law,authorization and authentication, hub, , switches
8. Define the term topology . Defina star , bus , ring , tree , graph , mesh topology .
9. Define all the guided transmission media with their advantages and disadvantages.
10. Define all the un - guided transmission media with their advantages and disadvantages.
11. Expand the following terms :GSM , TCP/IP , TDMA , CDMA , WAN , LAN , MAN , SMS , E-MAIL , URL , WLL , SMS,XML,HTML,WWW

Subjective Assignments For CBSE (XII) Computer Science Aspirants

Q1. Define the term Internet.

Q2. Differentiate between LAN, WAN and MAN.

Q3. Explain the following terms:

- a. HOST
- b. REPEATER
- c. BRIDGE
- d. ROUTER
- e. BRIDGE
- f. GATEWAY
- g. MODEM

Q4. Write in about 50 words the History of Internet.

Q5. What is GIAS.

Q6. What are the two types of accounts of Internet used in major.

Q7. What are the various tools of Internet.

Q8. How does CHATTING differ from EMAIL.

Q9. What are the various services of Internet.

Q10. Write short notes on the following:

- a. GOPHER
- b. MOSAIC
- c. USENET
- d. NEWS GROUPS
- e. WAIS

Q11. Define the following Internet terms:

- a. DNS
- b. EMAIL
- c. COOKIE
- d. JABBER
- e. HTTP

Q12. What is a Web Browser. Name its utility.

Q13. Name any three connecting devices of Internet.

Q14. Name any two Search Engines.

Q15. Differentiate between DOWNLOAD and UPLOAD.

Q16. Write a note of the following:

- a. Internet Security
- b. Public and Private Key
- c. Digital Signatures
- d. Private Virtual Network

17. Define the term Internet. How does communication take place on the Internet.

18. What are the main Hardware and Software requirements for using Internet.

19. Name and explain the various communication devices used for Internet Access.

20. Explain the following:

- (a) Browser
- (b) Web Page
- (c) Website

21. Name any two Browsers available with you.
22. What are the steps required to access the Internet using Explorer.
23. What is an E-Mail. How is to sent through the Internet.
24. Name any four utilities of E-mail.
25. Write in about 100 words about the EMAIL and its procedure using MS Explorer Software.
- 26.(a) What is the significance of Cyber Law?
- (b) Expand the following terms with respect to Networking:
- (i) XML
 - (ii) WWW
 - (iii) WLL
 - (iv) TCP/ IP
- (c) Which of the following units measures the speed with which data can be transmitted from one node to another node of a network? Also, give the expression of the suggested unit.
- (i) KMph
 - (ii) Mbps
 - (iii) MGps
- (d) "Hindustan Connecting World Association" is planning to start their offices in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to set up their head office in New Delhi in three locations and have named their New Delhi offices as "Sales Office", "Head Office" and "Tech Office". The company's regional offices are located at "Coimbatore", "Kolkata" and "Ahmedabad".

A rough layout of the same is as follows:

Approximate distances between these offices as per network survey team is as follows:

Place From	Place To	Distance
Head Office	Sales Office	10 KM
Head Office	Tech Office	70 Meter
Head Office	Kolkata Office	1291 KM
Head Office	Ahmedabad Office	790 KM
Head Office	Coimbatore Office	1952 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Head Office	100
Sales Office	20
Tech Office	50
Kolkata Office	50
Ahmedabad Office	50
Coimbatore Office	50

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following set of their offices:

- Head Office and Tech Office
- Head Office and Coimbatore Office

(ii) Which device will you suggest to be procured by the company for connecting all the computers within each of their offices out of the following devices?

- Modem
- Telephone
- Switch/ Hub

(iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local offices in New Delhi for ver effective and fast communication?

- Ethernet Cable
- Optical Fiber
- Telephone Cable

(iv) Suggest a cable/ wiring layout for connecting the company's local offices located in New Delhi. Also, suggest an effective method/ technology for connecting the company's regional offices at "Kolkata", "Coimbatore" and "Ahmedabad".

CHAPTER 15

SAMPLE TEST PAPERS

OBJECTIVE EXERCISE

[SOLVED & UNSOLVED]

C++

1. Name the combinational characters required for naming an Identifier in C++?
2. What are special symbols in C++ ?
3. Does C++ offer compatibility to lower case and upper case letters ?
4. What are keywords ?
5. Is it required to provide key words in either case, lower or upper ?
6. Name the three types of constants available in C++ ?
7. What are string constants of C++ ?
8. What are numeric constants of C++ ?
9. Explain the integer constants of C++ ?
10. Define Floating Point constants of C++ ?
11. What are Hex constants ?
12. What are Octal Constants ?
13. What are character Constants ?
14. How is an Identifier defined as a char type ?
15. What are non-graphic characters of C++ ?
16. Name the usage of the following backslash characters ?
 [\a](#), [\n](#), [\t](#), [\b](#), [\r](#), [\f](#), [\v](#), [\\](#), [\'](#), [\0](#), [\?](#) .
17. Name the different operators of C++ ?
18. Name the Arithmetic operators with definition ?
19. Define the precedence of execution of arithmetic operators in C++ ?
20. Name and define the assignment operators of C++ ?
21. Define an expression of C++ ?
22. Define the logical operators of C++ ?
23. Explain the Ternary Operator of C++ ?
24. What is an automatic conversion ?
25. What is Type Casting ?
26. Define the three types of statements of C++ ?

27. Define the remark statement of C++ ?
 28. Define the structure of a C++ program ?
 29. Name any two common compilers of C++ ?
 30. Explain the concept of IOSTREAM.H ?
 31. Explain the usage of cout & cin ?
 32. Define a manipulator of C++ ?
 33. Explain the usage of endl and setw manipulators ?
 34. Name the conditional statements of C++ ?
 35. Name the looping statements of C++ ?
 36. Name the break control statements of C++ ?
 37. Explain the usage of IF with an example ?
 38. Explain the usage of IF-ELSE with an example ?
 39. Write a program segment to print the maximum out of entered three numbers ?
 40. What is the output of the following statements :
 - (a) `int i=20;`
`cout<<i<<i++<<++i;`
 - (b) `int i=1,a=3;`
`i=a++;`
`cout<<i;`
 - (c) `int i=3;`
`if (i) cout<<i++;`
`else`
`cout<<i—;`
 - (d) `int x,x=3,y=2;`
`z=—x+y++;`
`cout<<z;`
 - (e) `char ch='a';`
`ch = (ch=='b') ? ch:'b';`
`cout<<ch;`
- [CBSE QUESTION BANK 1998]**
41. Given the values of a, b, c. Evaluate the following (answer whether True/False) :
`(x>=y) | (!(z==y)&&(z<x))`
 - (a) x=10, y=5, z=11
 - (b) x=10, y=10, z=10
 - (c) x=9, y=10, z=2
- [CBSE QUESTION BANK 1998]**
42. Write the equivalent expressions for the following :

$$\text{volume} = 3.1459 r h / 3$$

43. Suppose A, B and C are integer variable A=3, B=3, C=-5 and X, Y, Z are floating point variables where X=8.8, Y=3.5, Z=-5.2. Determine the value of the following expressions :
- (a) A%C
 - (b) A*B/C
 - (c) (A*C)%B
 - (d) X/Y
 - (e) X/(X+Y)
 - (f) int(X) % int(Y)

[CBSE QUESTION BANK 1998]

- 44. Explain switch statement of C++ ?
- 45. Explain the usage of Break in switch ?
- 46. Explain the default as used with switch ?
- 47. Define the syntax of for loop ?
- 48. Explain the syntax of while ?
- 49. Write a for loop that displays the numbers from 50 to 100 ?
- 50. Define the declaration of a block of statements ?
- 51. Write a while loop to display numbers from 10 to 100 ?
- 52. Name the number of times the loop is executed through 'do' ?
- 53. Explain the format of 'do' loop ?
- 54. Write a Do-while segment to print the sum of first hundred natural numbers?
- 55. Name the control branching statements of C++ ?
- 56. Explain the usage of break ?
- 57. Explain the usage of break with switch structure ?
- 58. Explain the usage of break with while loop ?
- 59. Define the concept of continue ?
- 60. Define the usage of continue with 'for' using an example ?
- 61. Define the usage of 'exit' as a function ?
- 62. Explain the usage of 'goto' as an unconditional control statement of C++?
- 63. Explain 'goto' statement with the help of an example program segment ?
- 64. Define the structure of the function ?
- 65. What is a function prototype ?
- 66. Explain the concept of Function Definition using an example ?

67. Define a function in C++ to input any number (N) and print the sum of all natural numbers from 1 to N.
68. Give the output of the following :

```
for(int i=5;i<10;i+2)
cout<<i-2<<endl;
```
69. What is an array ?
70. Where does an array get stored ?
71. Define storage of any ten numbers in an array through an example program ?
72. Define a program segment to assign the vowels in an array ?
73. Write a program to print the sum of any entered ten numbers using arrays?
74. Give the output of the following :

```
#include<iostream.h>
#include<iostream.h>
main()
{
    int x,y,z;
    x=y=10;
    z=x%y;
    cout<<z;
    getch();
    return 0;
}
```
75. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    clrscr(); // Given to clear the screen
    for (int i=1;i<5;i++)
    cout<<i;
    cout<<i;
    getch();
    return 0;
}
```

76. Give the output of the following program :

```
#include<iostream.h>
#include<iostream.h>
main()
{
    clrscr();
    for (int i=1;i<5;++i)
        cout<<i;
        cout<<i;
        getch();
        return 0;
}
```

77. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    clrscr();
    for(i=5;i>0;-- i)
        cout<<i;
        cout<<i;
        getch();
        return 0;
}
```

78. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    clrscr();
    for (int i=5;i>0;-- i)
    {
        cout<<i;
        i=i+1;
    }
    cout<<i;
    getch();
}
```

```
    return 0;
}
```

79. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    int num,a,b,c,d;
    clrscr();
    num = 12;
    for (a=1;a<num;a++)
    {
        b = num%a;
        if (b==0)
            cout<<a<<endl;
    }
    cout<<"Press any key to continue";
    getch();
    return 0;
}
```

80. #include<iostream.h>
#include<conio.h>
main()
{
 int num,i,b,c,e=0;
 clrscr(); //used to clear the screen
 num = 4567;
 b = num;
 for (i=0;i<=num;i++)
 {
 num=b;
 b=num/10;
 c=b*10;
 d=num-c;
 if (num==0) break;
 cout<<d;
 }

```
        cout<<endl<<"press any key to exit";
        getch();
        return 0;
    }
```

```
81. #include<iostream.h>
    #include<conio.h>
    main()
    {
        clrscr();
        int a,b;
        a=4;
        b=0;
        int c=0;
        for (b=1;b<=a;b++)
        {
            a=a+b;
            c=c+a;
            cout<<a<<b;

        }
        return 0;
    }
```

```
82. #include<iostream.h>
    #include<conio.h>
    main()
    {
        int a,b,c,d,j,x,i;
        for (i=0;i<=5;i++)
        for (j=1;j<=1;j++)
        {
            cout<<j+1;

        }
        return 0;
    }
```

```
83. #include<iostream.h>
    #include<conio.h>
    void main()
    {
```

```
int a,b,c,d,e;
c=1;
a=5,b=5;
switch(c)
{
    case 1:
        d=a+b;
        break;
    case 2:
        d=a-b;
}
cout<<d;
}
```

84. #include<iostream.h>
main()
{
int a,b,c,d,j,x,i;
for (i=0;i<=5;i++)
for (j=1;j<=1;j++)
{
cout<<j;
}
return 0;
}

85. #include<iostream.h>
main()
{
int a,b,store=0,c;
a=6;
for (b=2;b<=a-1;b++)
{
c=a%b;
if (c!=0)
store = store + b;
}
cout<<store;
return 0;

```
}  
86. #include<iostream.h>  
    main()  
    {  
        int a,b,store=0,c;  
        a=6;  
        for (b=2;b<=a-1;b++)  
        {  
            c=a+b;  
            if (c%2 == 0)  
                store = store + b;  
        }  
        cout<<store;  
        return 0;  
    }
```

```
87. #include<iostream.h>  
    main()  
    {  
        int a,b,store=0,c;  
        a=6;  
        for (b=2;b<=a-1;b++)  
        {  
            c=a+b;  
            if (c%2==0)  
                store = store + c;  
        }  
        cout<<store;  
        return 0;  
    }
```

```
88. #include<iostream.h>  
    main()  
    {  
        long aa,b,store=5,c;  
        aa=6;  
        for (b=1;b<=aa+2;b++)  
        {
```

```
        c=aa-b;
        if (c%2==0)
            store = store - c;
    }
    cout<<store;
    return 0;
}
```

89. `#include<iostream.h>`

```
main()
```

```
{
```

```
    int num,act,i;
```

```
    num=3;
```

```
    act=5;
```

```
    for (i=1;i<=num;i++)
```

```
    {
```

```
        act = act*i;
```

```
    }
```

```
    cout<<act;
```

```
    return 0;
```

```
}
```

90. What is the purpose of the following functions : `fabs()`, `abs()` and `pow()`

91. Indicate the name of the header file required for the following : `supper()`, `strlen()`, `cout`, `sqrt()`, `pow()`

92. The number[5] address of the array has which storage value of the cell.

93. Indicate an expression of C++ involving a logical operator which is true if the amount is 100 and balance is greater than 500.

94. Give the output of the following program :

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
int fact(int a);
```

```
main()
```

```
{
```

```
    int b,f;
```

```
    b=4;
```

```
    f=fact(b);
```

```
    cout<<f;
```

```
    getch();
```



```
    return 0;
}
int fact(int a)
{
    int s = 1;
    for (int i=1;i<=a;i++)
        s=s*i;
    return s;
}
```

95. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
int sum (int a);
main()
{
    int b,f;
    b=5;
    f=sum(b);
    cout<<f;
    getch();
    return 0;
}
int sum(int a)
{
    int s=0;
    for (int i=1;i<=a;i++)
        s=s+1;
    return s;
}
```

96. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
int repeat(int a);
main()
{
    int b;
```

```
        cout<<endl;
        b=6;
        repeat(b);
        getch();
        return 0;
    }
    int repeat(int a)
    {
        for (int i=1;i<=a;i++)
            cout<<a;
        return 0;
    }
```

97. Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
#include<ctype.h>
void len(char boy[10]);
main()
{
    int b;
    char bboy[10];
    for (int i=0;i<10;i++)
        bboy[i]='s';
    cout<<endl;
    len(bboy);
    getch();
    return 0;
}
void len (char boy[10])
{
    int l;
    l=strlen(boy);
    cout<<l;
    cout<<endl;
    for (int j=0;j<10;j++)
    {
```

```
        char a = toupper(boy[j]);  
        cout<<a;  
    }  
    return ;  
}
```

98. Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>  
#include<string.h>  
#include<ctype.h>  
main()  
{  
    int b;  
    char bboy[10];  
    cout<<endl;  
    bboy[0]='s',bboy[1]='h',bboy[2]='r';  
    bboy[3]='u',bboy[4]='t',bboy[5]='i';  
    len(bboy);  
    getch();  
    return 0;  
}  
void len(char boy[10])  
{  
    int l;  
    l=strlen(boy);  
    cout<<l;  
    for (int i=0;i<=l;i++)  
    {  
        char a = toupper(boy[i]);  
        cout<<a;  
    }  
    return;  
}
```

99. (a) Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>  
#include<string.h>
```

```
#include<ctype.h>
main()
{
    int b;
    char bboy[10];
    clrscr();
    bboy[0]='d',bboy[1]='e',bboy[2]='f',bboy[3]='g';
    len(bboy);
    getch();
    return 0;
}
void len(char boy[10])
{
    int l,v=0;
    l=strlen(boy);
    for (int i=0;i<=l;i++)
    {
        if ((boy[i]=='a') || (boy[i]=='e') || (boy[i]=='i') || (boy[i]=='o' || (boy[i]=='u'))
        v=v+1;
    }
    cout<<l<<v;
    return;
}
```

(b) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    int number[10],a,b,c,d;
    clrscr();
    for(int i=0;i<10;i++)
    {
        number[i]=i+i;
    }
    clrscr();
    for(int j=0;j<9;j++)
    {
```

```
        for(int k=j+1;k<10;k++)
        {
            if (number[j]>number[k])
            {
                a=number[j];
                number[j]=number[k];
                number[k]=a;
            }
        }
    }
    cout<<endl;
    for(i=0;i<10;i++)
    cout<<number[i]<<"\t";i++;
    getch();
    return 0;
}
```

(c) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    int number[10],a,b,c,d;
    clrscr();
    for(int i=0;i<10;i++)
    {
        number[i]= i*i;
    }
    cout<<"\a\a";
    clrscr();
    for(int j=0;j<10;j++)
    {
        for(int k=0;k<9;k++)
        {
            if (number[k]>number[k+1])
            {
                a=number[k];
                number[k]=number[k+1];
```

```
        number[k+1]=a;
    }
}
for(i=0;i<10;i++)
    cout<<number[i]<<"\t";
getch();
return 0;
}
```

(d) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<math.h>
main()
{
    int number[10],a,b,c,d;
    clrscr();
    for(int i=0;i<5;i++)
    {
        number[i]= pow (i,2);
    }
    cout<<"\a\a";
    clrscr();
    for(int j=0;j<5;j++)
    {
        for(int k=0;k<4;k++)
        {
            if (number[k]<number[k+1])
            {
                a=number[k];
                number[k]=number[k+1];
                number[k+1]=a;
            }
        }
    }
    for(i=0;i<5;i++)
        cout<<number[i]<<"\t";
```

```
getch();  
return 0;  
}
```

(e) Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>  
#include<math.h>  
main()  
{  
    int item[5],a,b,c,d;  
    clrscr();  
    for(int i=0;i<5;i++)  
    {  
        item[i]= pow (i,2);  
    }  
    cout<<"\a\a";  
    clrscr();  
    for(int j=0;j<5;j=j+2)  
    {  
        for(int k=0;k<4;k++)  
        {  
            if (item[k]<item[k+1])  
            {  
                a=item[k];  
                item[k]=item[k+1];  
                item[k+1]=a;  
            }  
        }  
    }  
    for(i=0;i<5;i++)  
    cout<<item[i]<<"\t";  
    getch();  
    return 0;  
}
```

(f) Give the output of the following program :

```
#include <iostream.h>  
#include<conio.h>
```

```
int main()
{
    int val=8;
    clrscr();
    cout<<'\\n'<< (val = 9);
    getch();
    return 0;
}
```

(g) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
    int value = 98;
    clrscr();
    cout<<'\\n'<< (value == 9);
    getch();
    return 0;
}
```

(h) Give the output of the following program :

```
#include <iostream.h>
#include <conio.h>
int main()
{
    clrscr();
    int one_char;
    one_char = 'a';
    cout<<(char)one_char << '\\n';
    cout << (int) one_char+10;
    getch();
    return 0;
}
```

(i) Give the output of the following program :

```
#include <iostream.h>
#include <conio.h>
int main()
{
```



```
clrscr();
char *one_char;
one_char = "internet";
cout<<(char)one_char[1]<< '\n';
cout << (int) one_char[2]+10;
getch();
return 0;
}
```

(j) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
    int number= 5;
    int total = 0;
    int count = 0;
    clrscr();
    while (number != 0)
    {
        number=number-1;
        if(number == 0)
            cout << "Thank you. Ending routine.\n";
        else count++;
        total += number;
    }
    cout << total << '\n';
    cout << count << '\n';
    cout << total / count << '\n';
    getch();
    return 0;
}
```

(k) Give the output of the following program :

```
#include <iostream.h>
#include<conio.h>
int main()
{
    clrscr();
```

```
int number, total;
for (number = 2, total = 2; number < 6; total += number,
    number++);
cout<<number<<endl<<total<<endl;
cout<<number;
getch();
return 0;
}
```

- (l) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
int a=0;
clrscr();
char *name;
name="Internet Browsing";
for(a=0;a<=8;a++)
cout<<name[a+1];
cout<<endl;
cout<<name[a];
cout<<endl<<(int)name[a]-1;
getch();
return 0;
}
```

- (m) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
void arm(int);
clrscr();
int num;
num=191;
arm(num);
getch();
return 0;
}
```

```
}  
void arm(int n)  
{  
    int number,sum=0,dg,dgg,digit;  
    number=n;  
    while(n>0)  
    {  
        dg=n/10;  
        dgg=dg*10;  
        digit=n-dgg;  
        cout<<digit+digit<<endl;  
        sum=sum+digit*digit*digit;  
        n=n/10;  
    }  
    cout<<digit<<endl<<sum;  
}
```

(n) Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>  
main()  
{  
    void arm(int);  
    clrscr();  
    int num;  
    num=153;  
    arm(num);  
    getch();  
    return 0;  
}  
void arm(int n)  
{  
    int number,sum=0,dg,dgg,digit;  
    number=n;  
    while(n>0)  
    {  
        dg=n/100;  
        dgg=dg*10;  
        digit=n-dgg;  
        cout<<digit+digit<<endl;  
        sum=sum+digit*digit*digit;  
        n=n/10;  
    }  
    cout<<digit<<endl<<sum;  
}
```

```
digit=n-dgg;
cout<<digit<<endl;
sum=sum+digit*digit*digit;
n=n/10;
}
cout<<digit;
}
```

(o) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<string.h>
main()
{
clrscr();
char *name;
int l;
name="SHANA";
l=strlen(name);
cout<<l<<endl<<(int) name[l-2];
cout<<endl;
cout<<name[l-3];
getch();
return 0;
}
```

(p) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<string.h>
main()
{
clrscr();
char *name;
int l=0;
name="dheeraj@lw1.vsnl.net.in";
l = strlen(name);
l=l-1;
```

```
cout<<endl;
for(int i=l;i>=0;i=i-2)
{ cout<<name[i];}
cout<<endl;
cout<<i;
cout<<endl;
cout<<name[i+4];
cout<<endl;
getch();
return 0;
```

```
}
```

(q) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<string.h>
#include<process.h>
main()
{
    clrscr();
    char *name,*name1;
    int l=0;
    name="Windows98";
    l = strlen(name);
    cout<<endl;
    for (int asc=90;asc>=65;asc--)
    {
        for(int i=0;i<l;i++)
        {
            if (name[i]==char(asc) || (name[i]==char(asc+32)))
                cout<<name[i];
        }
    }
    cout<<endl;
    getch();
    return 0;
```

}

- (r) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
main()
{
    int num=0, i=0,barr[10],a=0;
    clrscr();
    num=10;
    int nnum=num;
    while (num>0)
    {
        a=num%2;
        i=i+1;
        barr[i]=a;
        num=num/2;
    }
    cout<<endl;
    for (int k=i;k>=1;k-- )
        cout<<barr[k];
    cout<<endl<<endl;
    getch();
    return 0;
}
```

- (s) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
void main()
{
    clrscr();
    for ( int i=1;i<=5;i++)
    {
        if ((i%2)==0)
            cout<<i+i<<"\n";
        else
            cout<<i-1<<endl;
    }
    cout<<i;
```

```
getch();  
}
```

(t) Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>  
#include<string.h>  
#include<process.h>  
#include<stdio.h>  
#include<string.h>  
main()  
{  
    clrscr();  
    char *name,ans;  
    int l=0,count=0,max=0;  
    name="Multimedia";  
    l = strlen(name);  
    cout<<endl;  
    for(int a=0;a<l;a++)  
    {  
        for (int b=0;b<l;b++)  
        {  
            if (name[a]==name[b] && name[a]!=' ')  
                count = count+1;  
        }  
        if (max<count)  
        {  
            max=count;  
            ans=name[a];  
        }  
    }  
    count=0;  
    cout<<ans<<" "<<max<<endl;  
    getch();  
    return 0;  
}
```

(u) Give the output of the following program :

```
#include<iostream.h>  
#include<conio.h>
```

```
#include<stdio.h>
#include<string.h>
main()
{
    clrscr();
    char *name;
    int l=0,c=0;
    name="the computers in the city of the nawabs";
    l = strlen(name);
    cout<<endl;
    for(int i=0;i<=l;i++)
    {
        if ((name[i]=='t') && (name[i+1]=='h') && ((name[i+2])=='e'))
            c=c+1;}
    cout<<endl;
    cout<<c;
    getch();
    return 0;
}
```

(v) Give the output of the following program :

```
#include<iostream.h>
#include<conio.h>
#include<process.h>
void main()
{
    clrscr();
    int i,a;
    a=9;
    for (i=2;i<=a-1;i++)
    {
        if ((a%i)==0)
            cout<<a<<" "<<i;
    }
    getch();
}
```

100. What is a Structure ? How is it declared ?

101. Write a program segment to declare a structure result with name, rollnum and percent as members.
102. Explain the definition of a structure variable.
103. How do you access the structure members ?
104. Explain the initialization of members within a structure.
105. What are user defined structures.
106. How do you use typedef for declaring structures ?
107. Define the concept of an Enumerated Data Type.
108. What values shall be taken for members of the following enum function :
enum choice = {e-mail,www,Internet}
109. How can you change the Default Ordinal Types ?
110. Define the symbolic constants of the enumerated type.
111. Write the definition for the structure (applicant) with the following data:
Applicant Name, Code Number, Sex(M/F), Date of Birth (Day, Month, Year), Martial Status (Single/Married).
112. State the validity of the following :
enum boolean {false,true};
and
enum boolean {true,false};
113. Write a statement that declares an enumerated data type called fruits with the values :
apple, orange, mango, bannana.
114. Define a class and an object.
115. Explain the definition of a Class ?
116. How are objects declared as a Class.
117. Define the accessing of class variables.
118. How are objects referenced with the member functions ?
119. What is a constructor ?
120. What is a destructor ?
121. Explain the usage of constructor and a destructor.
122. Define Function Overloading ?
123. What is Polymorphism ?
124. Define Inheritance ?
125. Name the difference types of Inheritance ?
126. Name the three visibility modes ?
127. Define the usage of Public visibility mode ?

128. Define the usage of Private visibility mode ?
129. Define the usage of Protected visibility mode ?
130. Define the concept of Single Inheritance ?
131. Define the concept of Multilevel Inheritance ?
132. What is a Pointer ?
133. Explain the declaration of a pointer
134. What are Dynamic allocation operators
135. Define the new operator
136. Define the delete operator
137. What is a Reference Variable
138. Define a function call by reference
139. Define a function return by reference
140. Define an array ?
141. Define a Stack ?
142. Define a Queue ?
143. What is a circular queue ?
144. What is a file ?
145. What is a record ?
146. What are the basic file organisations ?
147. What are the modes conducted through manipulation of data file.
148. Name the two streams of file handling in C++.
149. Explain the usage of open(), close(), put() and get() functions of C++?
150. Define the usage of write() and read() functions.
151. Name the different format options used with the open statement. Also indicate the purpose of each.
152. Write program segment to open a file "test.dat" for reading only.
153. Write program segment to open a file "test.dat" for writing only.
154. Write program segment to open a file "test.dat" for both reading and writing.
155. Write program segment to open a file "test.dat" for adding.
156. Write the usage of good() ?
157. Write the usage of eof() ?
158. Write the usage of fail() ?
159. Write the usage of bad() ?
160. How is get() different from getline() ?

SQL Commands

Give the SQL statement to do the following :

161. To create a table STUDENT with Roll, Name, Age and Marks.

162. To create a table with the following structure as DEPART.

Deptcd Char(3)

Deptname Char(10)

City Char(20)

163. To create a table with the following structure as BABY.

name char(20);

164. Create a table called PROJECT with the following columns :

ProjID NUMBER(4)

ProjDesig CHAR(20)

ProjStartDT DATE

ProjEndDT DATE

BudgetAmt NUMBER(7)

MaxNoStaff NUMBER(2)

[CBSE Question Bank

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165. To display the student table with columns in the following order : name, class, marks.

166. To display the student table with columns of all name with marks <40.

167. To count the number of students who scored less than 40 marks of the table student.

168. To find the highest marks of the student table, as per the following format:
Mr/Ms. <name> has secured highest marks as <marks>

169. To list the names in ascending order of marks, with fields of rollno, names and marks.

170. To list the names in descending order of marks, with fields of names and marks from the student table :

171. To insert the following data into the student table :

111, "Yogita", 89.

172. To delete all records from student table with marks = 25.

173. To increase the marks of all students by 10, for name = "Shruti".

174. To count the total number of records in the table student.

Write SQL commands for the following taking in view the following table as SCHOOL:

No.	Name	Age	Department	Sex		
1	Ankit	45	Comp.Sc.	M		
2	Sumit	32	History	M		
3	Amit	22	Geog	M		
4	Suchitra	23	Maths	F		
5		Ankita		22	Hindi	F
6		Shruti		21	Comp.Sc.	
						F
7		Raksha		22	Hindi	F
8		Priya	33	Maths	F	

175. To show all information about the members of the Hindi Department.

176. To list the names of female members who are in Hindi department.

177. To list names of all members with the ascending order of their ages.

178. To display member's name, age and department name of males.

179. To count the number of members with age >21.

180. To insert a new row in the SCHOOL table with the following data :

9, "Pinto", 31, "Maths", "M"

Give the output of the following, considering the above table :

181. SELECT COUNT (DISTINCT AGE) FROM SCHOOL;

182. SELECT MAX(AGE) FROM SCHOOL WHERE SEX = "M";

183. SELECT AVG(AGE) FROM SCHOOL WHERE SEX ="M";

184. SELECT SUM(AGE) FROM SCHOOL WHERE SEX="M";

Consider the following table OFFICE and frame queries for the following:

S.No.	Emp.Name	Age	Department	Sex	B-Pay
1	Ankit	45	Comp.Sc.		M
2390					
2	Sumit	32	History		M
2323					
3	Amit	22	Geog	M	5654
4	Suchitra	23	Maths	F	5644
5	Ankita	22	Hindi	F	2322
6	Shruti	21	Comp.Sc.		F
3323					
7	Raksha	22	Hindi	F	4321
8	Priya	33	Maths		F
2388					

185. Find the Department for Employee Ankita.

186. Display the records of all employees who belong to the Hindi department.
187. Display the detailed table for all employees having Basic Pay greater than 3000.
188. Display the list of employees who belong to the Maths department in ascending order of ages.
189. Display the list of employees who belong to the Hindi department in descending order of ages.
190. Find the total number of records present in the table Office.
191. Find the total number of employees greater than 30 years of age.
192. Find the total number of employees Belonging to the the Computer Science department.
193. Find the total of Basic Pay of the employees :
194. Find the maximum of the Basic Pay being paid to the employees.
195. Modify the record having name as "Shruti", by increasing the Basic Pay by Rs. 100.
196. Modify all the records by increasing the Basic Pay by Rs. 200.
197. Insert a new record with the following information :
9 Poonam 30 Maths F 2348
198. Delete the record having Employee name ="Ankit".
199. Delete all the records belonging to the Hindi Department.

Boolean Algebra :

200. Define Binary logic ?
201. What is a Boolean Operation ?
202. Define a boolean function ?
203. Define a Boolean Expression ?
204. Name the three primary and secondary operators of Boolean Algebra ?
205. State any four postulates of boolean algebra ?
206. Define Idempotent Law ?
207. Define Absorptive Law ?
208. Define Involution Law ?
209. What is De Morgan's Theorem ?
210. State the principle of duality ?
211. State the steps required to calculate the dual of any expression ?
212. State the dual of : $A+A' = 1$
213. What is a Boolean Function ?

214. Define the Sum Of Products format of a boolean expression ?
215. Define the Product of Sums format of a boolean expression ?
216. What is a Karnaugh map ?
217. Draw the truth table of NAND gate ?
218. Define the XNOR gate ?
219. What is a Half Adder ?
220. What is a Full Adder ?
221. Differentiate between an Encoder and a Decoder ?
222. What are Universal Gates ? Name any two Universal Gates ?
223. Define the working of a XOR gate ?
224. What is a Multiplexer ?
225. What is a Multivibrator ?
226. What is a Minterm ?
227. What is a Maxterm ?
228. What is a Canonical Sum of Products ?
229. What is a Canonical Product of Sums ?
230. State the total number of combinations possible for a three input gate ?

SAMPLE PAPER - 2008
Class - XII
SUBJECT – COMPUTER SCIENCE

ATOMIC ENERGY CENTRAL SCHOOL, KAKRAPAR

II -Confidence Test

Subject: **Computer Sc.**
Time: **3 Hours**

Date: **04.02.08**

Class: **XII**
MM: **70**

1. (a) Differentiate between a global variable and a local variable. [1]
(b) Name the Header file(s) that shall be needed for successful compilation of the following C++ code? [2]

```
void main()
{
    char st[20];
    gets(st);
    if(isaplha(st[0])
        cout<<"Starts with alphabet";
    else
        cout<<strlen(st);
}
```

- (c) Rewrite the following program after removing syntactical error(s) if any. Underline each correction. [2]

```
#include<iostream.h>
#define SIZE =10
VOID MAIN()
{
    int a[SIZE]={ 10,20,30,40,50};
    float x=2;
    SIZE=5;
    for(int i=0;i<SIZE;i++)
        cout<<a[i]%x;
}
```

- (d) Find the output of the following program : [1]

```
i) #include<iostream.h>
#include<string.h>
struct Student
```

```
{
    int rno;
    char name[20];
};
void main()
{
    student a[2]={ 1,"Amit"},{ 2,"Sumit"};
    for(int i=0;i<2;i++)
    {
        cout<<"\n Rno"<<a[i].rno;
        cout<<"\n Name ";
        for(int j=0;j<strlen(a[i].name);j++)
            cout<<a[i].name[j]<<" ";
    }
}
```

ii) #include<iostream.h>

[1]

```
int a=10;
void main()
{
    void demo(int &,int,int*);
    int a=20,b=5;
    demo(a,a,&b);
    cout<<a<<b<<endl;
}
void demo(int &x, int y, int *z)
{
    a+=x;
    y*=a;
    *z=a+y;
    cout<<x<<y<<*z<<endl;
}
```

(e) In the following C++ program, what will be the maximum and minimum value of r generated with the help of random function? [1]

```
#include<iostream.h>
```



```
#include<stdlib.h>
void main()
{
    int r;
    randomize();
    r=random(20)+random(2);
    cout<<r;
}
```

- (f) Answer the questions(i) and (ii) after going through the following class : [2]

```
class Exam
{
    int year;
    public :
        Exam(int y) { year=y; } //constructor 1
        Exam(Exam &t);          //constructor 2
}
```

- (i) Create an object, such that it invokes constructor 1.
(ii) Write complete definition for constructor 2.

2. Define a class **Competition** in C++ with the following descriptions: [4]

Data Members:

Event_no	integer
Description	char(30)
Score	integer
qualified	char

Member functions:

- A constructor to assign initial values Event_No number as 101, Description as "State level", Score is 50 and qualified as 'N'.
- Input(), To take the input for event_no, description and score.
- Award(int), To award qualified as 'Y', if score is more than the cutoffscore passed as argument to the function else 'N'.
- Show(), To display all the details.

3. Answer the questions (i) to (iv) based on the following code :

```
class Employee
{
    int id;
    protected :
    char name[20];
    char doj[20];
    public :
    Employee();
    ~Employee();
    void get();
    void show();
};
class Daily_wager : protected Employee
{
    int wphour;
    protected :
    int nofhworked;
    public :
    void getd();
    void showd();
};
class Payment : private Daily_wager
{
    char date[10];
    protected :
    int amount;
    public :
    Payment();
    ~Payment();
    void show();
};
```

- (i) Name the type of Inheritance depicted in the above example. [1/2]
(ii) Name the member functions, which are accessible by the objects of class Payment. [1]
(iii) From the following, Identify the member function(s) that can be [1/2]

called directly from the object of class Daily_wager class

show(), getd(), get()

(iv) Find the memory size of object of class Daily_wager. [1/2]

(v) Is the constructors of class Employee will copied in class Payment? [1/2]

Due to inheritance.

4. (a) Write a function in C++ which accepts a character array and its size as arguments and reverse that array without using second array and library function. [3]

Example : if the array is having: "Computer Science"

Then after reversal it should rearranged as: "ecneicS retupmoC"

OR

WAF that accept an array of 10 integers with size. The function finds a particular number from the array by using the binary search method

- (b) An array A[-2..8][-2..5] is stored in the memory along the column with each element occupying 4 bytes. Find out the address of the element A[3][2]. [2]

- (c) Write a function in C++ to delete a node containing names of student, from a dynamically allocated stack of names. The function receives the value of top by reference. The stack is implemented with the help of following structure : [2]

```
struct student
{
    char name[20];
    student *next;
};
```

- (d) Write a function to insert a set of integer values in a circular queue and display them. [2]

- (e) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation: [2]

False, True , False , True ,Not, Or, True , Or, Or ,And

(Hint: Consider the each 'Not', 'Or', 'And' as operators and 'False' and 'True' are

operands)

(f) Find the post fix expression from the given infix expression: [2]

$(A+B-(C*D)+F*G*H+M)$

5. a) Assuming a binary file “FUN.DAT” is containing objects belonging to a class LAUGHTER (as defined below). Write a user defined function in C++ to add more objects belonging to class LAUGHTER at the bottom of it. [3]

Class LAUGHTER

```
{
    int idno;
    char Type[5];
    char Desc[255];

    PUBLIC:
        void Newentry()
        { cin>> Idno; gets(Type); gets(Desc); }
        void Showonscreen()
        { cout<<Idno<<" "<<Type<<endl<<Desc<<endl; }
};
```

b) Define the various file opening methods in c++ program. [2]

(c) WAF in c++ to store a set of price values with the item names in a file “ item-record.dat”. [3]

6. (a) Write SQL commands for (a) to (j) and write output for (h) on the basis of **Teacher** relation given below. [7]

No	Name	Age	Department	Date of Join	Salary	Sex
1.	jigal	34	Computer	10/01/97	12000	M
2.	Sharmila	31	History	24/03/98	20000	F
3.	Sandeep	32	Maths	12/12/96	30000	M
4.	Sangeeta	35	History	01/07/99	40000	F
5.	Rakesh	42	Maths	05/09/97	25000	M
6.	Shyam	50	History	27/02/97	30000	M
7.	Shiv Om	44	Computer	25/02/97	21000	M

8.	Shalakra	33	Maths	31/07/97	20000	F
----	----------	----	-------	----------	-------	---

- I. To show all information about the teacher of history department.
- II. To list the names of female teachers who are in Maths department
- III. To list names of all teachers with their date of joining in ascending order.
- IV. To count the number of teachers with age<35.
- V. To insert a new row in the TEACHER table with the following data:
9,"Raja",26,"Computer",'13/05/95',2300,"M".
- VI. To count the number of teachers having salary ≥ 12000 , with each department.
- VII. Give the output of following statement.
 - (i) Select COUNT(distinct department) from TEACHER.
 - (ii) Select name, MAX(Age) from Teacher where sex="F"

(b) Define the following terms in Database: [2]

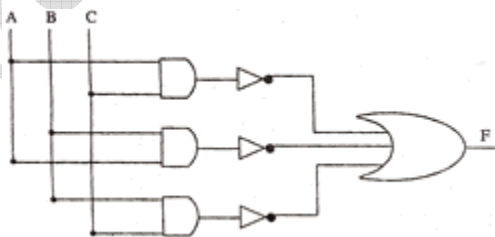
- (1) Set Difference
- (2) Foreign Key

(c) (i) What is a View? Write syntax to create a view from a table. [1]

(ii) Differentiate between DDL and DML commands. [1]

7. (a) State and verify Demorgan's Laws [2]

(b) Write the equivalent Boolean expression for the following Circuit [1]



(c) For the given truth table, give canonical sum-of-products(SOP) and canonical product-of- sum (POS) expression [2]

X	Y	Z	F o/p
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

(d) If $F(a,b,c,d) = \sum (1,3,4,5,7,9,11,12,13,15)$ obtain the simplified form using K-Map. [2]

(e) Write the principal of Duality and write the dual of the Boolean Expression: [1]

$$(B' + C) + A'$$

(f) Draw the Circuit for Boolean expression $(X+Y)(Y+Z)(X+Z)$ with help of NOR gate only. [1]

8. (a) Write the different type of Topologies with one advantage and one disadvantage. [3]

(b) Define Circuit Switching and Packet Switching [2]

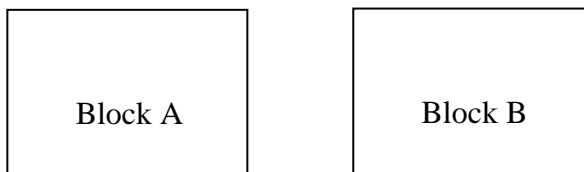
(c) Give one advantage and one disadvantage of optical fiber and coaxial cable used in communication. [1]

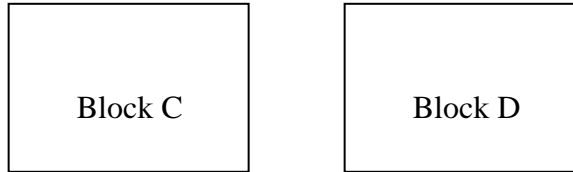
(d) Explain the following terms [2]

(1) Video Conferencing

(2) TCP/IP

(e) Knowledge Supplement Organization has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below.





The distances between the building are as :

Block A to Block C- 120 meters
Block A to Block B- 20 meters
Block A to Block D- 550 meters
Block B to Block D- 80 meters
Block D to Block C- 110 meters
Block B to Block C- 280 meters

The number of computers in each Block are as follows:

Block A - 120
Block B - 180
Block C - 20
Block D - 110

- (i) Suggest a cable layout of connections between the blocks and type of cable. [1]
- (ii) Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason. [1]
- (iii) Suggest the placement of the following devices with justification. [1]
- (a) Repeater
 - (b) Hub/Switch

- (iv) The organization is planning to link its front office situated in the city in a Hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed. [1]