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Presenting

II-PU PASSING PACKAGE EASY CAPSULES.

(As per Reduced syllabus 2020-21)

SOLVED MODEL QUESTION PAPERS

FOR THE SUBJECT:

“COMPUTER SCIENCE”



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SRSI PU College, Bellur
II-PUC, Answered Model Question Paper-1, for Reduced Syllabus -2021
Subject: Computer Science

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I. Answer all Questions of the following. (1-Marks questions)

1. Expand CMOS.

Ans: Complementary metal Oxide Semiconductor.

2. Which basic gate is also called as inverter?

Ans: NOT Gate.

3. What is an array?

Ans: Array is the data structure which has same name; same type but accept different values.

4. Give an example for primitive data structure.

Ans: int, float, char are the example for primitive data structure.

5. What is function overloading?

Ans: Two or more functions have same name, but different in number of arguments or type of arguments and perform different tasks.

6. Define Base class.

Ans: It is the class whose properties are inherited by another class.

7. Name any one characteristics of public visibility mode.

Ans: The public member of a base class become public member of the derived class.

8. How to declare a pointer?

Ans: General syntax- data_type *variable_name;

9. What is a Database?

Ans: A database is a collection of logically related data organized in a way that data can be easily accessed managed and updated.

10. What is a tuple in Database?

Ans: Record is also called as tuple which hold the data about individual object.

PART - B

II. Answer all the questions of the following. (2-Marks questions)

11. What is cache memory? Mention any one type of cache memory.

Ans: Cache memory is a high speed small amount of memory present in between CPU and RAM

Types are: Level1 Cache and Level2 Cache.

12. State and prove Involution law using truth table.

$\overline{\overline{X}} = X$ i.e., $X \xrightarrow{\text{NOT}} \overline{X} \xrightarrow{\text{NOT}} \overline{\overline{X}} = X$

Proof: If $x = 0$, then $\overline{x} = 1$ and $\overline{(\overline{x})} = 1 = 0 = x$

If $x = 1$, then $\overline{x} = 0$ and $\overline{(\overline{x})} = 0 = 1 = x$

X	\overline{X}	$\overline{\overline{X}}$
0	1	0
1	0	1

Thus, if a variable is complemented twice, we get the same variable.

Ans:

13. Define a) Data Member b) Member Function.

Ans: Data Member: The data in a class is called data member.

Member Function: The function in a class is called member function.

14. What is destructor? Write the symbol used with destructor.

Ans: Destructor is a special member function that will be executed automatically when object is destroyed.

Symbol: ~ member function

15. Mention any two advantages of Inheritance.

Ans: 1. Reusing existing code.

2. Faster development time.

16. Give any two differences between static and dynamic memory allocation.

Ans:

Static	Dynamic
i) Memory is allocated before the execution of the program begins. (During Compilation)	Memory is allocated during the execution of the program.
ii) No memory allocation or deallocation actions are performed during execution.	Memory Bindings are established and destroyed during the execution.
iii) Variables remain permanently allocated.	Allocated only when program unit is active.
iv) Implemented using stacks and heaps.	Implemented using data segments.

17. Differentiate between get() and getline() used with data files.

Ans:

Get()	Getline()
i) Get() is used to read a single character.	Getline() is used to read a whole line of text.
ii) Syntax: ifstream_object.get(ch);	Syntax : ifstream_object.getline(buffer,size);

18. Write any two features of Data Base Management System.

Ans: 1. Centralized data management.

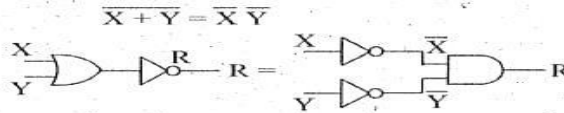
2. Controlled data redundancy.

PART - C

III. Answer all questions of the following. (3- marks Questions)

19. State and Prove De-Morgan's first theorem.

Ans: When the OR or Sum of two variables are inverted, this is same as inverting each variable individually and then anding these inverted variables.



X	Y	\overline{X}	\overline{Y}	$X + Y$	$\overline{X+Y}$	$\overline{X} \cdot \overline{Y}$
0	0	1	1	$0 + 0 = 0$	1	$1 \cdot 1 = 1$
0	1	1	0	$0 + 1 = 1$	0	$1 \cdot 0 = 0$
1	0	0	1	$1 + 0 = 1$	0	$0 \cdot 1 = 0$
1	1	0	0	$1 + 1 = 1$	0	$0 \cdot 0 = 0$

20. Explain the different operations performed on primitive data structure.

Ans: 1. **Create:** Used to create a new data structure.

2. **Destroy:** Used to remove the data structure from the memory space.

3. **Select:** Used by the programmer to access the data within the data structure.

4. **Update:** Used to change the data of data structure. OR any three of primitive data structures.

21. Write an algorithm for PUSH operation in stack data structure.

Ans: **Step 1:** If log N then

Print stack is full"

Exit

End If

Step 2: top=top+1

Step 3: stack[top]=item

Step 4: Return

22. Mention any three applications of OOP.

Ans: 1. Object oriented databases.

2. CAD/CAM systems

3. Computer graphics and applications.

23. Explain the features of parameterized constructors.

Ans: 1. Parameterized constructor can be overloaded.

2. For an object created with one argument, constructor with one argument invoked and executed.

3. Parameterized constructor can have default arguments and default values

24. Write any three advantages of pointer.

Ans: i) It is possible to write efficient programs

ii) Memory utilized properly.

iii) Dynamically allocate and de allocates memory.

iv) Easy to deal with hardware components.

v) Establishes communication between program and data

25. Explain any three modes to open a file in C++.

Ans:

- ios::app--Append to end of file.
- ios::in--Open file for reading only.
- Ios::out--Open file for writing only.

26. Write any three Differences between Manual and Electronic Data Processing.

Ans:

	Manual Data Processing	Electronic Data Processing
i)	Storage medium is paper	Storage medium is secondary storage medium
ii)	Labor cost is high Labor cost is economical	Labor cost is high Labor cost is economical
iii)	The volume of data which can be processed is limited.	The volume of data which can be processed can be very large.

PART - D

IV. Answer any SEVEN of the following. (5- marks Questions)

27. Explain any five components of mother board.

Ans:

1. **Processor:-** Processor is the main component on the motherboard and is called the brain of the computer. The CPU consists of Arithmetic Logic Unit(ALU), Control Unit(CU) and Registers.

2. **BIOS:-** BIOS is a small chip on the motherboard that holds a set of instructions to load the hardware settings required to activate various devices like keyboards, monitors or disk drives.

3. **CMOS:-**CMOS is a type of memory chip to store date, time and system setup parameters.

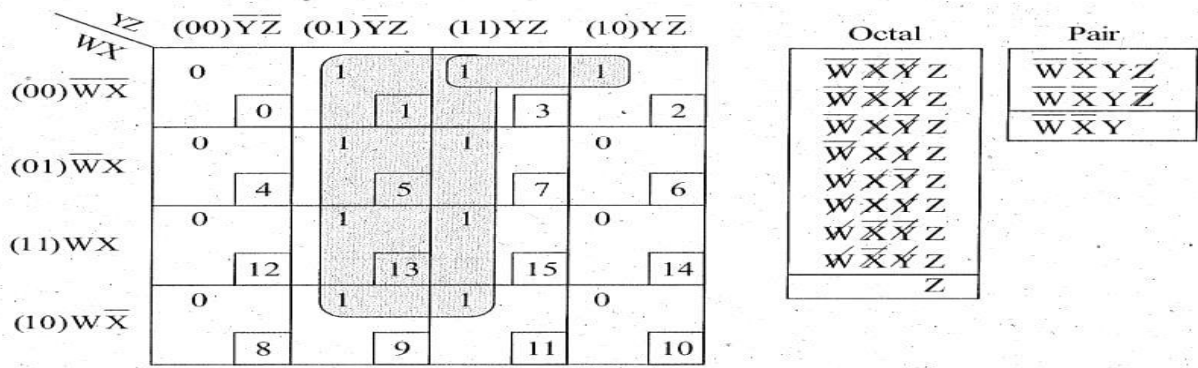
4. **Slots:-** Aslot is a opening in a computer where you can insert a printed circuit board

5. **Disk Controller:-** Disk controller is the circuit that enables the CPU to communicate with a hard disk, floppy disk, or other kind of disk drive.

28. Given the Boolean function

$$F(W,X,Y,Z)=\sum(1,2,3,5,7,9,11,13,15), \text{ Reduce it by using K- Map.}$$

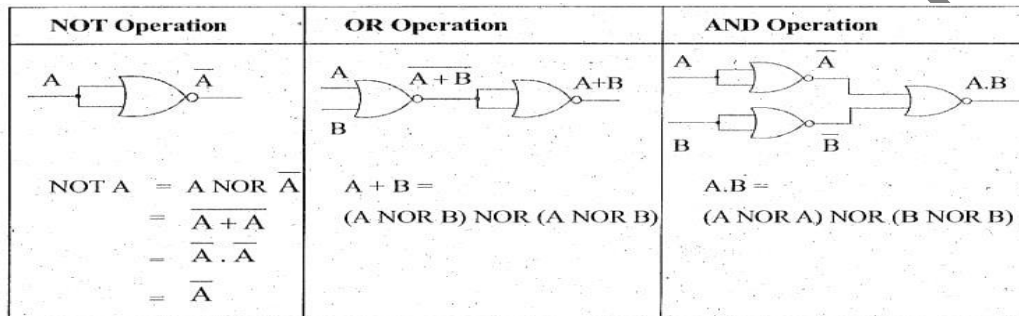
Ans:



$$F(W, X, Y, Z) = Z + \overline{W} \overline{X} Y$$

29. Realize logical NOT, AND and OR gates using NOR gate.

Ans:



30. Write an algorithm to search an element in an array using Binary Search.

Ans:

- Step 1: low = 0
- Step 2: high = N - 1
- Step 3: loc = -1
- Step 4: while (low <= high) Do
- Step 5: mid = (low + high) / 2
- Step 6: if (a[mid] == a) then
- Step 7: loc = mid
- Goto step 11
- End If
- Step 8: if a[mid] < a then
- Step 9: high = mid - 1
- else
- Step 10: low = mid + 1
- End if
- End of while loop
- Step 11: if (loc >= 0) then
- Step 12: print "element is found in location", loc

Step 13: print "element is not found"

End if

Step 14: exit

31. What is a Queue? Explain different types of Queues.

Ans: Queue is a ordered collection of items where insertion and deletion takes place at different ends.

Types of Queues:

- 1) **Simple Queue:** In simple queue insertion take place at rear end and deletion take place at front end,
- 2) **Circular Queue:** It is a queue in which all items are treated as circular such that last item follows the first item.
- 3) **Priority Queue:** It is a queue that contains items that have some priority
- 4) **Double Ended Queue:** It is a queue in which insertion and deletion takes place at both ends

32. Mention and explain any five features of OOP.

Ans:

1. **Class:** Class is collection of data and functions.
2. **Object:** Object is a real world entity with some characteristics and behavior.
3. **Inheritance:** It is the capability of one class to inherit the properties from mother class,
4. **Polymorphism:** It is the ability for a message to be processed in more than one form
5. **Function Overloading:** Two are more functions have same name but differ in the arguments or data types

33. Explain Class definition with syntax and example.

Ans: Class is a process of naming a class, data variables and interface operations of the class.

Syntax Class user_defined_name

```
{  
    private: Member data  
           Member functions  
    protected: Member data  
           Member functions  
  
    public: Member data  
           Member functions  
  
};
```

Keyword class is used to declare a class.

User_defined_name is the name of the class.

Class a body enclosed in a pair of flower brackets.

Class body contains the declaration of its members.

There are generally three types of members namely private, public and protected.

Example:

```
class Student
{
    private: int Regno;
            char name[20];
public:
    void getdata();
    void display();
};
```

In the above example

class name is Student.

The class account contains four member data and two methods or member functions. Both of these member data are private by default, while both functions are public by default.

34. Explain inline function with programming example.

Ans: The function which inserts entire body in a function call is called as inline function Syntax

```
inline return type function name(arguments)
```

```
{
    Function body;
}
```

Ex:

```
#include <iostream.h>
#include <conio.h>
inline int square(int a)
{
    return (a*a);
}
```

```
int main()
```

```
{
    int x;
    clrscr();
```

```
    x=square(5);
```



```

cout<<"square of 5="<<x;
getch();
return 0;
}

```

35. Write the rules for writing a constructor function.

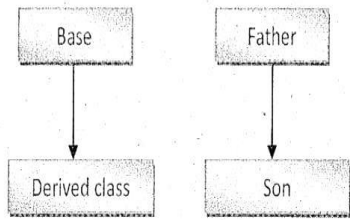
Ans:

1. Constructor always has name that is same as the class name.
2. There is no return type for constructor.
3. Constructor should be declared in a public section.
4. It is not possible to refer to the address of the constructor.
5. Constructors make implicit calls to the operators new and delete when memory allocation is required.

36. What inheritance? Explain single level and multi-level inheritance.

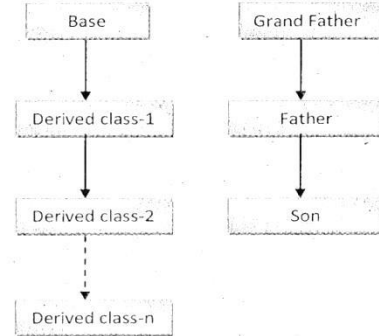
Ans: Inheritance is the capability of one class to inherit the properties from another class.

Single-level inheritance: If a class is derived from a single class is called as single-level inheritance.



base

Multi-level inheritance: If class is derived from another derived class is called as multi-level inheritance.

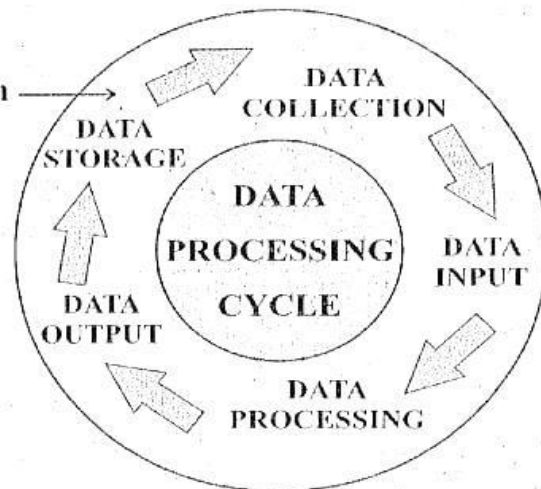


37. Write and explain Data Processing Cycle.

Ans:

Data Processing Cycle

Data Communication



1. **Data Collection:** It is process of collecting the data from various sources.
2. **Data Input:** This is any kind of data like letters, numbers, symbols, shapes. images put into the computer system that needs processing.
3. **Date Processing:** The processing is series of actions or operations from input data to generate outputs.
4. **Storage:** Data and information not currently being used must be stored so it can be accessed later.
5. **Output:** The result obtained after processing the data must be presented to the user in user understandable form.
6. **Communication:** Computers now a days have communication ability which increase their power.

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II-PUC, Answered Model Question Paper-2, for Reduced Syllabus -2021
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PART – A

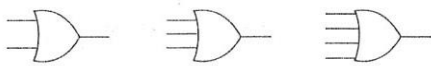
I Answer all the questions of following. (1-Marks questions)

1. Expand USB.

Ans: Universal Serial Bus

2. Write a standard symbol for OR gate.

Ans: The symbol for OR gate is given below:



OR operation is symbolized as i.e.. X or Y is written as $X+Y$

3. Give an example for non-primitive data structure.

Ans: Tree, Graph.

4. Define stack data structure.

Ans: Stack is an ordered collection of items where insertion and deletion takes place at same end. (LIFO).

5. What is inline function?

Ans: The function which inserts entire body in a function call is called as inline function.

6. What is visibility mode in inheritance?

Ans: Visibility mode defines the visibility or accessibility of base class members within derived class

7. Mention any one type of inheritance?

Ans: 1. Single-level inheritance

2. Multi-level inheritance

3. Multiple inheritances

4. Hierarchical inheritance

5. Hybrid inheritance

8. Which is the address of operator in pointers?

Ans: Address operator '&' used in pointers.

9. What is information?

Ans: Information is processed data with definite meaning.

10. Define primary key.

Ans: **Primary key:** A key that uniquely identify each record in a table.

PART – B

II Answer all the questions. (2-Marks questions)

11. Mention the types of UPS.

Ans: 1. Offline UPS. 2. Online UPS.

2. Define the terms minterm and maxterm.

Ans: **Minterm:** Minterm is a product of all literals (with or without bar) within the logic system.

Maxterm: Maxterm is a sum of all literals (with system. or without har) within the logic.

3. Name any two access specifiers.

Ans: 1. Private. 2. Public 3. Protected

4. Write the syntax and example for default constructor.

Ans: When a user-defined class does not contain an explicit constructor, compiler automatically invokes definite constructor. Declaring a constructor with arguments hides default constructor.

```
class _name::class_name(int-0)
```

```
Example: student()
```

```
{}
```

5. Define base class and derived class.

Ans: Base class: The class whose properties are inherited by another class Derived class: The class which inherits the properties of base class

6. Name the operators used to allocate and de-allocate memory space dynamically.

Ans: New operator

example int Number;

```
pNumber=new int;
```

Delete operator

Example: delete iptr,

```
delete student;
```

7. What is input stream and output stream.

Ans: Input stream: The stream which supplies data to the program. Output stream: The stream that receives data from the program.

8. Briefly explain logical one tier architecture.

Ans: In 1 tier architecture,

DBMS is the only entity where user directly sits on DBMS and uses it. Any changes done here will directly be done on DBMS itself.

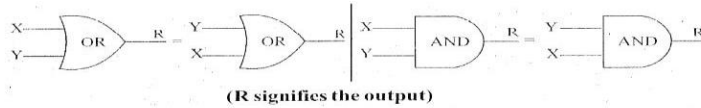
It does not provide handy tools for end users and preferably data base designers and programmers use single tier architecture.

PART – C

III Answer all the questions. (3-Marks questions).

1. State and prove commutative law using truth table.

Ans: COMMUTATIVE law states $X+Y=Y+X$ and $X.Y=Y.X$



X	Y	X+Y	Y+X
0	0	0	0
0	1	1	1
1	0	1	1
1	1	1	1

2. Write any three advantages of arrays.

Ans: Advantages of arrays

1. It is used to represent multiple data items of same type by using single name.
2. It can be used to implement other data structures like linked list, stacks, queues, trees, graphs etc.
3. Two-dimensional arrays are used to represent matrices.

3. Write an algorithm for pop operation in stack data structure.

Ans: Algorithm for PUSH and POP operation in stack data structure.

Algorithm for PUSH Operation:

PUSH(STACK, TOP, SIZE, ITEM)

STACK is the array that contains N elements and TOP is the pointer to the top element of the array
ITEM the element to be inserted. This procedure inserts ITEM into the STACK

Step 1: if $TOP=N-1$ then

 PRINT "Stack is full"

 Exit

End of if

Step 2: $TOP=TOP+1$

Step 3: $STACK[TOP]=ITEM$

Step 4: Return.

Algorithm for POP Operation:

POP(STACK, TOP, ITEM)

STACK is the array that store N items, and TOP is the pointer to the top element of the array, This

procedure deleted top element from STACK.

Step 1: IF TOP = -1 then PRINT "Stack is empty"

Exit

End of If

Step 2: ITEM= STACK[TOP]

Step 3: TOP=TOP-1

Step 4: Return

4. Define
 - a. Data abstraction.
 - b. Data encapsulation.
 - c. Polymorphism.

Ans: **1. Data abstraction:** The process of representing essential features without including background details or explanations.

2. Data encapsulation: The data encapsulation combines data and functions into a single unit.

3. Polymorphism :The ability for a message to be processed in more than one form,

Objects, Classes, Data abstraction, Data encapsulation, Inheritance, Overloading, Polymorphism, Dynamic binding. Message passing.

5. Mention different types of constructors.

Ans: Different types of constructors:

1. Default constructor
 2. Parameterized constructor
 3. Copy constructor
-
6. Briefly explain static memory allocation.

Ans: Static memory allocations: In the static memory allocation, the amount of memory to be allocated is predicted and pre-known. This memory is allocated during the compilation. All the declared variables declared normally, are allocate memory statically

Example: int a; //Allocates 2 bytes of memory during the compilation time.

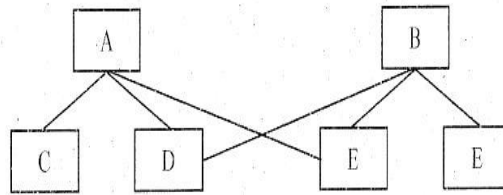
7. Explain in any three file opening modes in C++.

Ans:

File mode	Meaning	Stream type
ios::app	Append to end of file	ofstream
ios::in	Open file for reading only	ifstream
ios::out	Open file for writing only	ofstream
ios::ate	Open file for updation and move the file pointer to the end of file	ifstream, ofstream
ios::binary	Opening a binary file	ifstream, ofstream
ios::noreplace	Turn down opening if the file already exists	ofstream
ios::nocreate	Turn down opening if the file does not exists	ofstream
ios::trunc	On opening, delete the contents of file	ofstream

8. Explain network data model.

Ans: In network model the data are linked in parent-child relationship. However the data are represented in the form of graph. The data therefore can be accessed through several paths.



A parent node can have many child nodes and the child node also can have many parents. Therefore many-many relationship is possible between data. Any link or relationship broken between nodes may result in problems in DB and further database design also becomes complex.

PART – D

IV Answer all the questions. (5-Marks questions)

1. What is cache memory? Explain any two types.

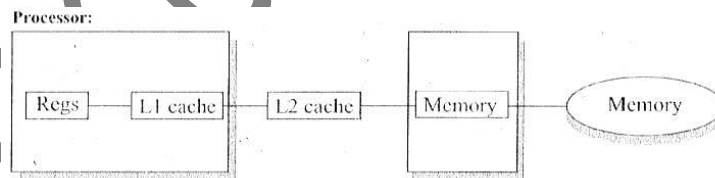
Ans: **Cache memory:** Cache memory is a small amount of high speed memory present in between CPU and RAM.

Types of Cache memory:

1. L1 cache,
2. L2 cache,
3. L3 cache.

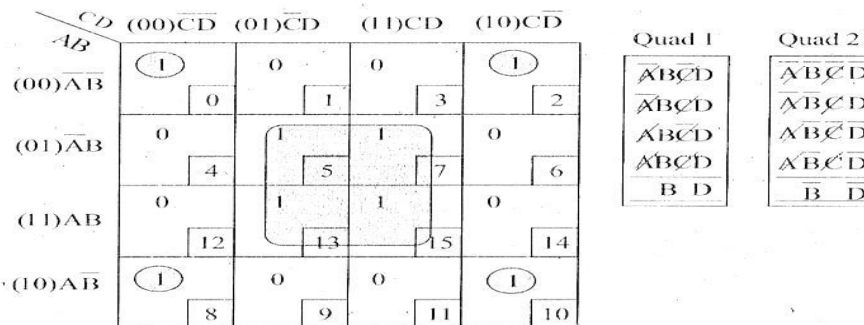
L1 cache: It is also called as "primary cache". It is the fastest memory in the computer and closest to the processor.

L2 cache: It is located on the motherboard. It is slower than L1 cache.



2. Given the Boolean function $F(a,b,c,d)=\sum(0,2,5,7,8,10,13,15)$ Reduce it by using K-Map..

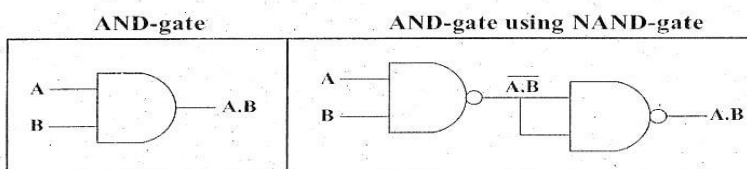
Ans:



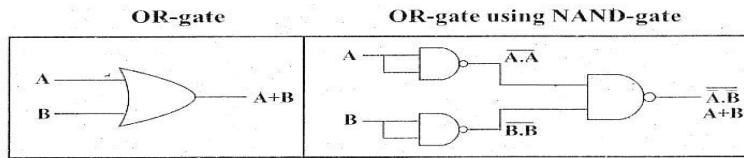
Final result $F(A, B, C, D) = \overline{B}D + B\overline{D}$
 Priority is given for quad (Internal foldings)

3. Realize NOT, AND and OR gates using NAND gate.

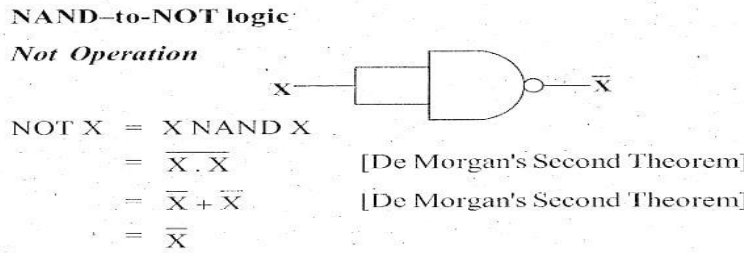
Ans:



The OR construct



gate using NAND gate can be follows.



4. Write an algorithm for inserting an element into the array.

Ans:

Step 1: for I= N-1 down to P

A[I+1] =A[I]

End of for

Step 2: A[P]=ITEM

Step 3: N=N+1

Step 4: Exit

5. Briefly explain the operations performed on Queues.

Ans: The operations performed on queues.

1. **Queue():** It creates a new queue that is empty.
2. **Enqueue:** It inserts new element into the rear end of queue.
3. **Dequeue():** It removes front element from the queue.
4. **Isempty():** It checks whether queue is empty or not.
5. **Size():** It returns the total number of items in the queue.

6. Write any five applications of object-oriented programming.

Ans: Applications of object-oriented programming.

1. Object oriented-databases.
2. CAD/CAM systems.
3. Hyper media, Hypertext, Expert media.
4. Office automation systems,
5. Computer graphic applications.

7. Briefly explain inside class definition with syntax and example.

Ans: **Inside class definition:** To define member function inside the class, the function declaration within

the class is replaced by actual function definition inside the class. A function defined in the class is treated as inline function. Only small function are defined inside the class definition. Syntax: return type class name (member function)

Example:

```
class rectangle
{
int length, breath;
public: void getdata()
{
    cin>>length;
    cin>> breath;
}
void putdata (void)
{
    cout<<length;
    cout<< breath ;
}
};
```

8. Explain function overloading with suitable programming example.

Ans: Function Overloading

```
#include<iostream.h>
#include <process.h>
#include <iomanip.h>
#include <conio.h>
#include <math.h>

class fun_ovrload
{
    float s;
public:
    double area(double a)
    {
        return a*a;
    }
    double area(double double b)
    {
```

```

        return l*b;
    }
double area(double a double b, double c)
{
    S= (a+b+c)/2.0;
    return(sqrt(s* (s-a) *(s-b)* (s-c)));
}
};
void main()
{
    int ans;
    double x,y,z;
    clrscr();
    fun_ovrload fl;
    cout<<"enter the number of inputs (1(or)2(or)3)"<<endl;
    cin>>ans;
    if(ans ==1)
        cout<<"enter the side"<<endl;
        cout<<"area of the square is "<<fl.area(x)<<endl;
    else if(ans== 2)
        cout<<"enter the sides"<<endl;
        cout<<"area of the rectangle is "fl.area(x,y)<<endl;
    else
        cout<<"enter the sides"<<endl;
        cout<<"area of triangle is "<<fl.area(x,y,z)<<endl;
    getch();
}

```

9. What is destructor? Write the rules for destructor function.

Ans: Destructor is a special member function that will be executed automatically when an object is destroyed.

Rules:

1. Destructor name is same as that of class. The first character must be tilde(~).
2. Destructor does not have a return value. Destructor can never return a value.
3. They take no arguments. Therefore destructors cannot be overloaded.
4. Destructors must be declared in public section.

The destructor will be called automatically when an object is destroyed. A Destructor, used to destroy

the objects that have been created by a constructor. Like a constructor, the destructor is a member function whose name is the same as the class name but is preceded by a tilde (-). For example, the destructor for the class sum can be defined as shown below:

```
~sum() { }
```

A destructor never takes any argument nor does it return any value. It will be invoked implicitly by the compiler upon exit from the program (or block of code as the case may be) to clean up storage that is no longer accessible. It is a good practice to declare destructors in a program since it releases memory space for future use.

Syntax :

```
class class_name
{
private:
//data variables
public:
class_name(); // constructor
~class_name(); // destructor
};
```

Example:

```
class account
{
float balance , rate;
public:
account(); // constructor
~account(); // destructor
};
```

10. Write any five advantages of inheritance.

Ans: Advantages of inheritance:

1. Reusing existing code.
2. Easy to maintain
3. Memory utilization.
4. Faster development time.
5. Easy to extend.

11. Give the difference between manual and electronic data processing.

Ans:

<i>Manual Data processing</i>	<i>Electronic Data processing</i>
<ul style="list-style-type: none"> ● The Volume of the data, which can be processed is limited in a desirable time 	The volume of data which can be processed can be very large.
<ul style="list-style-type: none"> ● Manual data processing requires large quantity of paper 	Reasonable less amount of paper is used
<ul style="list-style-type: none"> ● The speed and accuracy at which the job is executed is limited 	The job executed is faster and accurate
<ul style="list-style-type: none"> ● Labour cost is high 	Labour cost is economical.
<ul style="list-style-type: none"> ● Storage medium is paper. 	Storage medium is secondary storage medium.

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