

**Course Code: BIT 112**

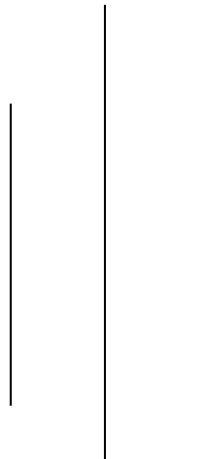
**Course Name: BCA**

**Program: BIT FALL 2019**

**Semester: 1 Year/ I semester**



**COLLEGE OF MANAGEMENT &  
INFORMATION TECHNOLOGY  
BACHELOR IN INFORMATION TECHNOLOGY**



**ASSIGNMENT**

**Submitted by:**

**Submitted to:**

Name: Bishal Bhattarai

Lincoln University

Year/ Semester: First, Fall 2019

LCID: LC00017000753

**Date: 2020.06.27**

Bishal Bhattarai

Q.n.1.

What is K-map? Why it is used? Explain k-map with example.

K-map is used:

K-map abbreviates for Karnaugh Map which was introduced in 1953 by Maurice Karnaugh. It is the graphical representation of any given expression which is a simplification of Boolean Algebra. We can construct k-map using 2, 3, 4 variables.

The following are the main uses of k-map:

1. k-map is used to minimize the number of logic gates that you use to implement any digital circuit.
2. It's simplification technique is easier and simple also chance of less error in designing it.
3. The minimization will reduce cost, efficiency and power consumption.
4. K-map is table like representation but it gives more information than truth table.

For Example:

SOP FORM of K-map of 3 variables:  
 $Z = \sum A, B, C (1, 3, 6, 7)$

Solution:

		B	
		0 $\overline{B}$	1 B
A	$\overline{A}$	0 $\overline{A.B}$	$\overline{A.B}$
	A	1 $A.B$	A.B

**2. What is an expansion slot? Explain its types?**

A motherboard circuit, used to insert a circuit board for additional features like memory, video, sound etc. to a computer. Following are the types of expansion slot:

**ISA slot:** Industry Standard Architecture (ISA) is 16-bit oldest slot. Such slots had the installation of sound card. These types of slots are commonly found in AT boards and marked by black color.

**AGP slot:** Accelerated Graphic Port (AGP) is a modern port basically developed for video card. It is used to increase and update the graphic card. AGP runs on a 32-bit bus.

**PCL slot:** The PCL slot is the most important components of motherboard which is commonly used to mount motherboard add on cards. The high speed bus supports 64 bits PCL.

**AMR slot:** To increase the audio AMR slot is used. Nowadays there is no any uses of AMR slot because it comes with modem and sound card.

**3. What is chipset? Explain the Northbridge and southbridge.**

The most significant components that can be found on the motherboard. For eg. i820 or Intel 820 chipset. There were chips for various items such as: chips for keyboard controller, chips for mouse controller, chips for sound controller, chips for memory controller etc.

**Northbridge:** The Northbridge links the Southbridge to the CPU and is commonly referred to as the core for the memory power. Northbridge makes the computer faster and also faster in components requirements. The Northbridge directly connects I/O signals to the CPU.

**Southbridge:** Commonly Southbridge is responsible for the hard drive controller, the I/O controller and integrated hardware on the motherboard. Southbridge manages the slower connections from the motherboard, including tools for input/output and computer peripherals such as expansion slots and hard disk drivers.

**4. What is BIOS? Explain its functions.**

BIOS is a component of the motherboard. In simple word BIOS is the simple input output method. The BIOS for your computer is stored on your motherboard on a disk. The chip contains all the motherboard information of motherboard and setting which can be modified by entering your computer's BIOS mode. The BIOS is a ROM chip found on the motherboard that allows you to access and customize the most basic level of your computer system.

Functions of BIOS are:

**POST:** Power on self-test is the computer's initial series. It checks the computer hardware before loading the operating system to make sure that there are no any errors.

**Bootstrap loader:** The operating system is installed. If there is capable operating system, the BIOS must transfer power to that system.

**BIOS drivers:** BIOS drivers are the low level drivers which gives the computer basic operational control over the hardware of your computer.

**BIOS or CMOS setup:** The configuration software which allows us to configure hardware setting including device setting including machine passwords, time and data.

5. Explain the different types of logic gates with its logic diagram and truth table.

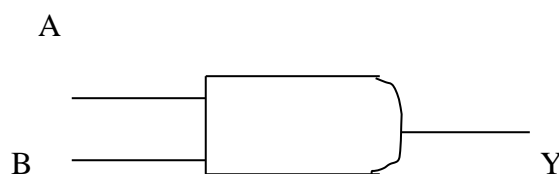
There are different types of logic gates. They are:

**AND Gate:** The logic gate in which out of two input signals (0 or 1), if any one input signal is false (0) then the whole result is false otherwise true.

Truth table

Inputs		Outputs
A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

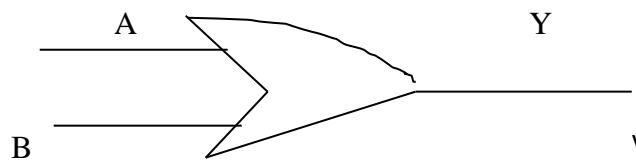
Logical diagram



**OR Gate:** The logic gate in which out of two input signals (0 or 1), if any one input signal is true (1) then the whole result will be true otherwise false.

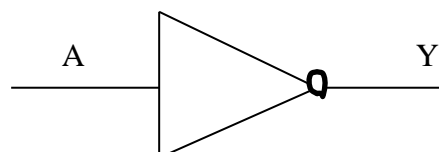
Truth table

Inputs		Outputs
A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1



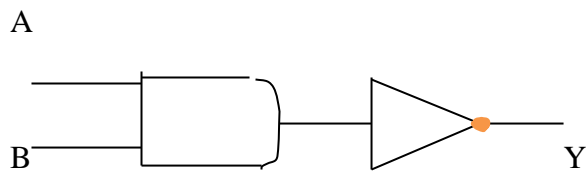
**NOT Gate:** The logic gate in which out of one input signal (0 or 1), if any one input signal is true (1) then the result will be false otherwise true

Inputs	Outputs
A	A
0	1
1	0



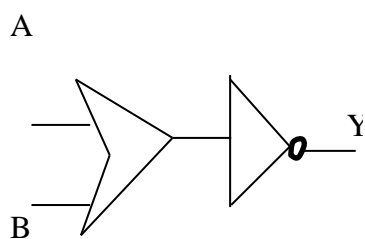
**NAND Gate:** A NOT-AND operation is known as NAND operation. It has n input and one output.

Inputs		Outputs
A	B	$\overline{AB}$
0	0	1
0	1	1
1	0	1
1	1	0



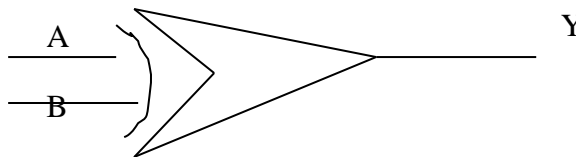
**NOR Gate:** A NOT-OR operation is known as NOR operation. It has n inputs and one output.

Inputs		Outputs
A	B	$\overline{A+B}$
0	0	1
0	1	0
1	0	0
1	1	0



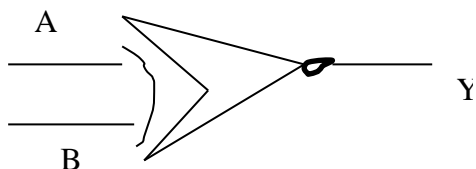
**XOR Gate:** XOR or EX-OR gate is special type of gate. It can be used in the half adder, full adder and subtractor. The exclusive OR gate is abbreviated as EXOR gate or sometimes as X-OR gate. It has n inputs and one output.

Inputs		Outputs
A	B	$A \oplus B$
0	0	0
0	1	1
1	0	1
1	1	0



- **XNOR Gate:** XNOR gate is a special type of gate. It can be used in the half adder, full adder and X-NOR gate. It has n inputs and one output.

Inputs		Outputs
A	B	$\overline{A \oplus B}$
0	0	1
0	1	0
1	0	0
1	1	1



**Course Code: BIT 112**

**Course Name: BCA**

**Program: BIT FALL 2019**

**Semester: 1 Year/ I semester**