# 8 Lecture - CS302

## **Important Subjective**

#### What is Boolean algebra?

Answer: Boolean algebra is a branch of mathematics that deals with logical operations and binary variables. It is used to represent and manipulate logical expressions.

## What is a logic gate?

Answer: A logic gate is a digital circuit that performs a logical operation on one or more binary inputs and produces a single binary output.

#### What is the difference between an AND gate and an OR gate?

Answer: An AND gate produces an output of 1 only if all of its inputs are 1, while an OR gate produces an output of 1 if at least one of its inputs is 1.

#### What is a truth table?

Answer: A truth table is a table that shows the output of a logic gate or circuit for all possible combinations of inputs.

### What is the complement of a Boolean expression?

Answer: The complement of a Boolean expression is the expression obtained by negating all of its variables.

#### What is the distributive law in Boolean algebra?

Answer: The distributive law states that A  $\cdot$  (B + C) = (A  $\cdot$  B) + (A  $\cdot$  C).

### What is the purpose of logic simplification?

Answer: The purpose of logic simplification is to reduce the complexity of a logical expression or circuit, leading to faster and more efficient computation.

#### What is a Karnaugh map?

Answer: A Karnaugh map is a graphical tool used for simplifying Boolean expressions by grouping adjacent cells in a truth table that have the same output value.

#### What is the Quine-McCluskey algorithm?

Answer: The Quine-McCluskey algorithm is a method used for logic simplification that involves finding all prime implicants of a Boolean expression and then selecting the minimum set of prime implicants that covers all the minterms.

#### What is the difference between a NAND gate and a NOR gate?

Answer: A NAND gate produces an output of 0 only if all of its inputs are 1, while a NOR gate produces an output of 1 only if all of its inputs are 0.