

10 Lecture - CS302

Important Subjective

1. **What is a Boolean expression?**

Answer: A Boolean expression is a mathematical expression made up of variables, operators, and constants, which evaluates to either true or false.

2. **How is a Karnaugh map used to simplify Boolean expressions?**

Answer: A Karnaugh map is used to simplify Boolean expressions by grouping adjacent cells with the same output value, which results in the elimination of redundant terms.

3. **What is a minterm and how is it used in Boolean algebra?**

Answer: A minterm is a product term that represents the output of a logical expression. It is used in Boolean algebra to represent a particular combination of input variables that results in a true output.

4. **What is a maxterm and how is it used in Boolean algebra?**

Answer: A maxterm is a sum term that represents the output of a logical expression. It is used in Boolean algebra to represent a particular combination of input variables that results in a false output.

5. **What is a don't-care condition in a Karnaugh map?**

Answer: A don't-care condition in a Karnaugh map is a cell whose output value is not relevant to the function being implemented, and can therefore be assigned either a 0 or a 1 value for simplification purposes.

6. **What is the difference between a sum-of-products expression and a product-of-sums expression?**

Answer: A sum-of-products expression is an expression in which several ANDed terms are ORed together, while a product-of-sums expression is an expression in which several ORed terms are ANDed together.

7. **What is a Boolean function?**

Answer: A Boolean function is a function that maps a set of binary input values to a set of binary output values using Boolean algebraic operations.

8. **What is a prime implicant in Boolean algebra?**

Answer: A prime implicant is a product term that covers the largest possible number of minterms in a Boolean function, and cannot be further simplified or reduced.

9. **What is meant by the term "logical equivalence" in Boolean algebra?**

Answer: Logical equivalence refers to the fact that two Boolean expressions are equivalent if they produce the same output for all possible input combinations.

10. **What is a truth table?**

Answer: A truth table is a table that lists all possible combinations of input values for a Boolean expression, along with the corresponding output values. It is used to evaluate the truth value of a Boolean expression for every possible input combination.