

B. Tech. (IT & Mathematical Innovation)
Sem II : Paper 911213: Electronics at Work & Circuit Simulation

Assignment 13: Digital Electronics: Logics Gates

- Q1: What are gates in digital electronics? Name 7-types of gates.
- Q2: What are logic gates? Why are they so called?
- Q3: What is a NOT gate? How is it realized? Give its symbol and truth table.
- Q4: What is an OR gate? How is it realized? Give its symbol and truth table.
- Q5: What is a AND gate? How is it realized? Give its symbol and truth table.
- Q6: What is Boolean Algebra?
- Q7: What is a NOR gate? How is it realized? Give its symbol and truth table.
- Q8: Show that a NOR gate is equivalent to a bubbled AND gate. Hence state De Morgan's First Theorem.
- Q9: What is a NAND gate? How is it realized? Give its symbol and truth table.
- Q10: Show that a NAND gate is equivalent to a bubbled OR gate. Hence state De Morgan's Second Theorem.
- Q11: The truth table, logic circuits and Boolean equations are different ways of looking at the same thing. Explain.
- Q12: Why are NAND and NOR called Universal gates? Design NOT, AND and OR gates using them.
- Q13: What is an XOR gate? How is it realized? Give its symbol and truth table.
- Q14: What is an XNOR gate? How is it realized? Give its symbol and truth table.
- Q15: Show that an AND – OR Network always produces a "Sum of Product" Equation.
- Q16: Show that an OR – AND Network always produces a "Product of Sum" Equation.
- Q17: Prove Equivalence of NOR-NOR = OR-AND logic.
- Q18: Prove equivalence of NAND-NAND=AND-OR logic.