1. What is the primary function of a Half Adder?

a) To perform addition of two binary numbers
b) To perform addition of multiple binary numbers
c) To perform subtraction of two binary numbers
d) To perform logical AND operation

Answer: a) To perform addition of two binary numbers

Explanation: A half adder is a combinational logic circuit that adds two single-digit binary numbers and produces a sum bit (S) and a carry bit (C). It cannot handle carry from previous additions.

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2. What distinguishes a Full Adder from a Half Adder?

a) Full Adder has two inputs and one output
b) Full Adder can handle carry from previous additions
c) Full Adder only produces a sum bit
d) Full Adder can only add three binary numbers

Answer: b) Full Adder can handle carry from previous additions

Explanation: Unlike a Half Adder, a Full Adder can handle not only the addition of two binary numbers but also includes an input for the carry from the previous addition.

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3. What is the primary function of a Half Subtractor?

a) To perform addition of two binary numbers
b) To perform subtraction of two binary numbers
c) To perform logical OR operation
d) To perform logical XOR operation

Answer: b) To perform subtraction of two binary numbers

Explanation: A half subtractor is a combinational logic circuit used to perform subtraction of two single-digit binary numbers. It produces a difference bit (D) and a borrow bit (B).

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4. In a Full Subtractor, what does the borrow bit represent?

a) Borrowed bit from the previous subtraction
b) Overflow bit
c) Carry bit
d) Sign bit

Answer: a) Borrowed bit from the previous subtraction

Explanation: The borrow bit in a Full Subtractor represents the need to borrow from a higher

bit during subtraction, similar to how a carry bit works in addition.

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5. What distinguishes a Parallel Binary Adder from a Serial Adder?

a) Speed of operation
b) Number of inputs
c) Simplicity of design
d) Handling of inputs

Answer: d) Handling of inputs

Explanation: In a Parallel Binary Adder, all bits of the operands are added simultaneously, whereas in a Serial Adder, addition is performed sequentially, one bit at a time.

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6. What is the primary advantage of a Fast Adder over traditional adders?

a) Reduced complexity
b) Lower power consumption
c) Higher speed
d) Compatibility with different data types

Answer: c) Higher speed

Explanation: Fast Adders utilize optimized designs to perform addition operations more quickly compared to traditional adders.

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7. What is the key feature of a Carry Look Ahead Adder?

a) It eliminates the need for carry propagation delay
b) It reduces the number of logic gates
c) It prioritizes carry generation over addition
d) It operates in serial mode

Answer: a) It eliminates the need for carry propagation delay

Explanation: Carry Look Ahead Adders pre-calculate carry bits for each bit position, eliminating the need for carry propagation delay seen in ripple carry adders.

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8. What is the function of a BCD Adder?

a) To add binary-coded decimal numbers
b) To subtract binary-coded decimal numbers
c) To convert binary numbers to decimal
d) To perform logical operations on binary-coded decimal numbers

Answer: a) To add binary-coded decimal numbers

Explanation: BCD Adders are designed specifically to add binary-coded decimal numbers, which are commonly used in digital systems for representing decimal digits.

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9. What operation does a Binary Multiplier perform?

a) Addition
b) Subtraction
c) Multiplication
d) Division

Answer: c) Multiplication

Explanation: Binary Multipliers are circuits designed to perform multiplication of two binary numbers.

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10. What is the primary function of a Magnitude Comparator?

a) To compare the magnitudes of two binary numbers
b) To perform addition of two binary numbers
c) To perform subtraction of two binary numbers

d) To convert binary numbers to decimal

Answer: a) To compare the magnitudes of two binary numbers

Explanation: A Magnitude Comparator is used to determine whether one binary number is greater than, less than, or equal to another binary number based on their magnitudes.