1.What is the basic building block of arithmetic circuits?
A) Multiplexer
B) Demultiplexer
C) Adder
D) Decoder
Answer: C) Adder
Explanation: Adder is the fundamental component used in arithmetic circuits for addition operations.

2.Which logic gate is used in the construction of a Half Adder?
A) AND
B) OR
C) XOR
D) NOT
Answer: C) XOR
Explanation: Half Adder consists of an XOR gate and an AND gate.

3.What is the function of a Full Adder?
A) Adds two binary numbers
B) Adds three binary numbers
C) Adds two binary numbers with carry input
D) Adds two decimal numbers
Answer: C) Adds two binary numbers with carry input
Explanation: Full Adder adds two binary numbers along with a carry input from the previous stage.

4.What is the difference between a Half Adder and a Full Adder?

A) Half Adder has only one input
B) Full Adder has an additional carry input
C) Full Adder has only one output
D) Half Adder has an additional carry input
Answer: B) Full Adder has an additional carry input
Explanation: Full Adder can add three inputs: two binary numbers and a carry input from the previous stage.

5.Which logic circuit is used to perform both addition and subtraction operations?
A) Half Adder
B) Half Subtractor
C) Full Adder
D) Full Subtractor
Answer: D) Full Subtractor
Explanation: Full Subtractor can perform both addition and subtraction.

6.What is the function of a Look-ahead carry generator?
A) Generates carry-in bit
B) Generates carry-out bit
C) Generates carry-in and carry-out bits simultaneously
D) Generates overflow flag
Answer: C) Generates carry-in and carry-out bits simultaneously
Explanation: Look-ahead carry generator predicts carry-out without waiting for the carry-in.

7.Which logic circuit is used to add Binary Coded Decimal (BCD) numbers?
A) Half Adder
B) Full Adder

C) BCD Adder
D) Full Subtractor
Answer: C) BCD Adder
Explanation: BCD Adder is designed specifically to add Binary Coded Decimal numbers.

8.In series addition of binary numbers, which bit is transmitted first?
A) Least Significant Bit (LSB)
B) Most Significant Bit (MSB)
C) Carry bit
D) Overflow bit
Answer: B) Most Significant Bit (MSB)
Explanation: In series addition, the MSB is transmitted first.

9.Which circuit is used to select one out of several input lines and route it to a single output line?
A) Multiplexer
B) Demultiplexer
C) Encoder
D) Decoder
Answer: A) Multiplexer
Explanation: Multiplexer selects one input line from multiple inputs and forwards it to a single output.

10.What is the function of a decoder?
A) Converts binary data into its equivalent decimal form
B) Converts decimal data into binary form
C) Selects one output line from multiple input lines

D) Combines multiple input lines into a single output line
Answer: C) Selects one output line from multiple input lines
Explanation: Decoder decodes the input and selects one of the output lines based on the input code.

11.Which operation can an ALU (Arithmetic Logic Unit) not perform?
A) Addition
B) Subtraction
C) Multiplication
D) Division
Answer: D) Division
Explanation: ALU typically performs addition, subtraction, and logical operations but not division.

12.What does ALU stand for?
A) Arithmetic Logic Unit
B) Automated Logic Unit
C) Advanced Logic Unit
D) Algorithmic Logic Unit
Answer: A) Arithmetic Logic Unit
Explanation: ALU performs arithmetic and logical operations on data.

13.Which of the following is a parallel addition technique?
A) Ripple Carry Addition
B) Carry Look-ahead Addition
C) Series Addition
D) Both A and B

Answer: D) Both A and B
Explanation: Both Ripple Carry and Carry Look-ahead Addition are parallel addition techniques.

14.Which logic circuit is used to convert a binary number into its equivalent Gray code?
A) Encoder
B) Decoder
C) Multiplexer
D) Demultiplexer
Answer: A) Encoder
Explanation: Encoder converts binary data into a different format, such as Gray code.

15.What is the main advantage of parallel addition over serial addition?
A) Lower hardware complexity
B) Faster operation
C) Reduced power consumption
D) Easier implementation
Answer: B) Faster operation
Explanation: Parallel addition processes multiple bits simultaneously, resulting in faster operation.

16.Which logic circuit is used to combine multiple input lines into a single output line?
A) Encoder
B) Decoder
C) Multiplexer
D) Demultiplexer
Answer: C) Multiplexer

Explanation: Multiplexer selects one input line from multiple inputs and forwards it to a single output.

17.In a Full Subtractor, what inputs are required?
A) Two binary numbers
B) Two binary numbers and a borrow input
C) Three binary numbers
D) Three binary numbers and a borrow input
Answer: D) Three binary numbers and a borrow input
Explanation: Full Subtractor subtracts three binary numbers along with a borrow input from the previous stage.

18.Which logic circuit is used to divide one input into multiple outputs?
A) Encoder
B) Decoder
C) Multiplexer
D) Demultiplexer
Answer: D) Demultiplexer
Explanation: Demultiplexer divides a single input into multiple outputs.

19.What is the purpose of an encoder in digital electronics?
A) To convert analog data to digital data
B) To convert digital data to analog data
C) To convert binary data to a more compact format
D) To convert binary data to its equivalent Gray code
Answer: C) To convert binary data to a more compact format
Explanation: Encoder compresses binary data into a more compact format for transmission or

storage.

20.Which logic circuit is used to perform logical AND operation?
A) Multiplexer
B) Demultiplexer
C) Encoder
D) Gate
Answer: D) Gate
Explanation: Logic gates such as AND gate perform logical AND operations on input signals.

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