

Unit-III:Combinational Logic Circuits

Multiple Choice Questions (20)

1. A half adder adds:

- A) Three binary bits
- B) Two binary bits
- C) Four binary bits
- D) Decimal numbers

Answer: B

2. A full adder has:

- A) Two inputs
- B) Three inputs
- C) Four inputs
- D) One input

Answer: B

3. A half subtractor produces:

- A) Sum and Carry
- B) Difference and Borrow
- C) Product and Carry
- D) Quotient and Remainder

Answer: B

4. Which circuit performs both addition and subtraction?

- A) Decoder
- B) Encoder
- C) Adder-Subtractor
- D) Comparator

Answer: C

5. A BCD adder is used to add:

- A) Binary numbers
- B) Decimal digits in BCD form
- C) Octal numbers
- D) Hexadecimal numbers

Answer: B

6. A magnitude comparator is used to:

- A) Store data
- B) Compare two binary numbers
- C) Convert codes
- D) Generate clock pulses

Answer: B

7. A decoder converts:

- A) Many inputs to fewer outputs
- B) Binary information into unique outputs
- C) Analog to digital
- D) Decimal to BCD

Answer: B

8. A 2-to-4 decoder has:

- A) 2 outputs
- B) 4 outputs
- C) 8 outputs
- D) 16 outputs

Answer: B

9. An encoder converts:

- A) Multiple inputs into binary code
- B) Binary to decimal
- C) Decimal to hexadecimal
- D) Analog to digital

Answer: A

10. A priority encoder gives priority to:

- A) Lowest input
- B) Highest-priority active input
- C) First output
- D) Last output

Answer: B

11. A multiplexer is also called:

- A) Data Distributor
- B) Data Selector
- C) Comparator
- D) Encoder

Answer: B

12. A 4-to-1 multiplexer has:

- A) 4 inputs and 1 output
- B) 1 input and 4 outputs
- C) 2 inputs and 4 outputs
- D) 8 inputs and 2 outputs

Answer: A

13. A demultiplexer performs:

- A) Many-to-one operation
- B) One-to-many operation
- C) Addition
- D) Comparison

Answer: B

14. A 1-to-8 demultiplexer has:

- A) 8 inputs
- B) 1 input and 8 outputs
- C) 8 outputs only
- D) 2 outputs

Answer: B

15. A full adder can be constructed using:

- A) One half adder
- B) Two half adders and one OR gate
- C) One XOR gate
- D) One NAND gate

Answer: B

16. The output of a comparator indicates:

- A) $A > B$, $A = B$, or $A < B$
- B) Sum
- C) Carry
- D) Borrow

Answer: A

17. Which combinational circuit selects one input from many inputs?

- A) Decoder
- B) Multiplexer

- C) Encoder
- D) Comparator

Answer: B

18. Which combinational circuit routes one input to one of many outputs?

- A) Multiplexer
- B) Decoder
- C) Demultiplexer
- D) Encoder

Answer: C

19. The carry output of a half adder is generated using:

- A) OR gate
- B) XOR gate
- C) AND gate
- D) NOR gate

Answer: C

20. Which of the following is a combinational circuit?

- A) Flip-Flop
- B) Register
- C) Counter
- D) Decoder

Answer: D

Unit-III: Fill in the Blanks (20)

1. A half adder has **two** inputs.
2. A full adder has **three** inputs.
3. A half subtractor produces **difference** and **borrow**.
4. A full adder produces **sum** and **carry**.
5. A BCD adder is used to add **BCD numbers**.
6. A comparator compares **binary numbers**.
7. A decoder converts binary information into **unique outputs**.
8. A 2-to-4 decoder has **4** outputs.
9. An encoder converts multiple inputs into **binary code**.
10. A priority encoder gives priority to the **highest-priority active input**.
11. A multiplexer is also called a **data selector**.
12. A demultiplexer is also called a **data distributor**.
13. A 4-to-1 multiplexer has **4** inputs and **1** output.
14. A 1-to-8 demultiplexer has **8** outputs.
15. A full adder can be built using **two half adders and one OR gate**.
16. The carry output of a half adder is generated by an **AND** gate.
17. The sum output of a half adder is generated by an **XOR** gate.
18. Combinational circuits do **not** have memory.
19. The output of a comparator indicates **greater than, less than, or equal to**.
20. Multiplexers and decoders are examples of **combinational logic circuits**.