Register No.:

1668

October 2026

Time – Two hours
(Maximum Marks: 60)

N.B. 1. Answer all questions under Part-A. Each question carries 1 mark.
2. Answer any 5 questions under Part-B. Each question carries 2 marks.
3. Answer any 3 questions under Part-C. Each question carries 10 marks.

PART – A

1. Which gate is called as Universal Logic Gate?
   a) OR
   b) AND
   c) NAND
   d) EX-OR

2. ASCII stands for
   a) American Standard Code for Idea Interchange
   b) American Standard Code for Information Intelligence
   c) American Standard Code for Information Interchange
   d) American Standard Code for Information Intellectual

3. NOT gate contains
   a) Only one input
   b) 2 inputs
   c) 4 inputs
   d) 8 inputs

[Turn over...

4. What is the output of OR gate when both inputs are HIGH?
   a) LOW
   b) HIGH
   c) Invalid
   d) None

5. The purpose of K-map is
   a) To simplify Boolean expressions
   b) To count numbers
   c) To perform addition
   d) To store data

6. A half adder has
   a) 1 input and 1 output
   b) 2 inputs and 1 output
   c) 2 inputs and 2 outputs
   d) 3 inputs and 2 outputs

7. A demultiplexer is the reverse of
   a) Decoder
   b) Comparator
   c) Multiplexer
   d) Encoder

8. Which one is not a combinational circuit?
   a) Multiplexer
   b) Decoder
   c) Flip-Flop
   d) Adder

9. Which Flip Flop is called as Universal Flip Flop?
   a) SR Flip Flop
   b) JK Flip Flop
   c) D Flip Flop
   d) T Flip Flop

10. Asynchronous Counter is also called as
   a) Shift Register
   b) Parallel Counter
   c) Ripple Counter
   d) SIPO Converter

11. D Flip Flop is also called as
   a) Toggle Flip Flop
   b) Delay Flip Flop
   c) Divide by 2 Counter
   d) Set Reset Flip Flop

12. Flip Flop is a _____ logic element.
   a) Unistable
   b) Bistable
   c) Tristable
   d) Nullstable

13. Which of the following is an integrating ADC?
   a) Flash ADC
   b) Successive Approximation ADC
   c) Dual Slope ADC
   d) Parallel Comparator ADC

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14. A DAC converts
    a) Analog to Digital
    b) AC to DC
    c) Digital to Analog
    d) High frequency to low frequency

15. Which device converts electrical signal into light in digital interfacing?
    a) Relay
    b) Solenoid
    c) LED
    d) Motor

16. The principle of Successive Approximation ADC is based on
    a) Binary search algorithm
    b) Counting pulses
    c) Repeated integration
    d) Resistive ladder

17. Which RAM type is faster but more expensive?
    a) DRAM
    b) SRAM
    c) Flash RAM
    d) NVRAM

18. Which device uses NAND flash memory internally?
    a) RAM module
    b) DVD
    c) SSD
    d) Magnetic tape

19. PLA consists of two programmable stages namely

a) Decoder and Multiplexer

b) NAND plane and NOR plane

c) AND plane and OR plane

d) OR plane and XOR plane

20. ROM can be best described as

a) Volatile and programmable

b) Non-volatile and read-only

c) Volatile and read-only

d) Non-volatile and volatile both

PART – B

21. What is BCD?

22. Differentiate between Multiplexer and Demultiplexer.

23. Write the principle of duality in Boolean algebra.

24. What is a Shift Register?

25. Differentiate between synchronous and asynchronous counters.

26. Define sensor and give any two examples.

27. Define memory write operation.

28. What is PLD?

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PART – C

29. Explain NAND and NOR logic gates with truth table and logic diagram.

30. Explain the working of a priority encoder with truth tables and applications.

31. Explain the working principle of 4-bit shift register with truth tables and timing diagrams.

32. Discuss the working of successive approximation A/D converter.

33. Describe the PLA architecture with neat diagram.
