

UNIT-I: Multiple Choice Questions (20)

1. The base of the binary number system is:

- A) 8
- B) 10
- C) 2
- D) 16

Answer: C

2. The hexadecimal number system uses:

- A) 8 symbols
- B) 10 symbols
- C) 16 symbols
- D) 2 symbols

Answer: C

3. Which number system uses digits 0–7?

- A) Decimal
- B) Binary
- C) Octal
- D) Hexadecimal

Answer: C

4. The 2's complement of a binary number is obtained by:

- A) Adding 1 to the original number
- B) Finding 1's complement and adding 1
- C) Subtracting 1
- D) Reversing the bits

Answer: B

5. Which code is mainly used for error detection?

- A) Gray Code
- B) ASCII
- C) Parity Code
- D) Excess-3

Answer: C

6. Hamming code is used for:

- A) Data compression
- B) Error correction
- C) Multiplication
- D) Division

Answer: B

7. Boolean algebra was developed by:

- A) Newton
- B) George Boole
- C) Einstein
- D) Pascal

Answer: B

8. Which gate is called the inverter?

- A) AND
- B) OR
- C) NOT
- D) XOR

Answer: C

9. The output of an AND gate is HIGH when:

- A) Any input is HIGH
- B) All inputs are HIGH
- C) All inputs are LOW
- D) Any input is LOW

Answer: B

10. Which gate gives HIGH output when any input is HIGH?

- A) AND
- B) OR
- C) NAND
- D) XNOR

Answer: B

11. NAND gate is a combination of:

- A) AND + NOT
- B) OR + NOT
- C) XOR + NOT
- D) NOR + NOT

Answer: A

12. NOR gate is a combination of:

- A) AND + NOT
- B) OR + NOT
- C) XOR + NOT
- D) NAND + NOT

Answer: B

13. Which gate is called a Universal Gate?

- A) AND
- B) NAND
- C) OR
- D) XOR

Answer: B

14. The identity law of Boolean algebra is:

- A) $A+0=A$
- B) $A+A=A$
- C) $A \cdot A=A$
- D) $A+A'=1$

Answer: A

15. The complement law is:

- A) $A+A'=1$
- B) $A+A=A$
- C) $A \cdot A=A$
- D) $A+1=1$

Answer: A

16. Canonical SOP consists of:

- A) Maxterms
- B) Minterms
- C) Literals
- D) Variables only

Answer: B

17. Canonical POS consists of:

- A) Minterms
- B) Maxterms

- C) Literals
- D) Constants

Answer: B

18. Floating-point representation is mainly used for:

- A) Integers
- B) Fractions
- C) Characters
- D) Logic Gates

Answer: B

19. Fixed-point representation is mainly used for:

- A) Integers
- B) Floating numbers only
- C) Characters
- D) Error detection

Answer: A

20. Which gate produces the complement of OR operation?

- A) NAND
- B) NOR
- C) XOR
- D) XNOR

Answer: B

UNIT-I: Fill in the Blanks :

1. Binary number system has a base of **2**.
2. Decimal number system has a base of **10**.
3. Octal number system has a base of **8**.

4. Hexadecimal number system has a base of **16**.
5. Binary digits are called **bits**.
6. The 1's complement is obtained by **inverting all bits**.
7. The 2's complement is obtained by adding **1** to the 1's complement.
8. **Parity bit** is used for error detection.
9. **Hamming code** is used for error correction.
10. Boolean algebra was introduced by **George Boole**.
11. The NOT gate is also called an **inverter**.
12. The output of an AND gate is HIGH only when **all inputs are HIGH**.
13. The output of an OR gate is HIGH when **at least one input is HIGH**.
14. NAND and NOR are called **universal** gates.
15. Canonical SOP consists of **minterms**.
16. Canonical POS consists of **maxterms**.
17. The complement of 0 is **1**.
18. The complement of 1 is **0**.
19. Boolean variables can take only **two** values.
20. Digital circuits operate using **binary** logic.