Maulana Azad College Aurangabad

B. Sc. First Semester

Subject: ELECTRONICS, Course: ELE-102 Paper II

Title: DIGITAL ELECTRONICS -I

Chapter 1: Number System:

1. The decimal number system has ……. digits.
   a) 2, b) 5, c) 10, d) 0

2. The digits used in binary number system are ……..
   a) 0&1, b) 0 and 2, c) 0 to 9, d) 0 to F

3. Digits 0 & 1 are used in ……..number system.
   a) Binary, b) Decimal, c) Octal, d) Hexadecimal

4. The base of the decimal number system is ……..
   a) 2, b) 8, c) 16, d)10

5. The base of binary number system is ……
   a) 2, b) 8, c) 16, d)10

6. The base of hexadecimal number system is ……
   a) 2, b) 8, c) 16, d)10

7. The base of octal number system is ……
   a) 2, b) 8, c) 16, d)10

8. The weight of second digit from right in decimal number system is ……
   a) 2, b) 10, c) 100, d) 0

9. The weight of third digit from right in binary number system is ……
   a) 2, b) 8, c) 10, d) 1

10. The value of 7 in $(378)_{10}$ is ……
    a) 7, b) 70, c) 700, d) 20

11. The value of B in $(1B4)_{16}$ is ……
    a) B, b) 176, c) 11, d) 69

12. The decimal equivalent of $(FF)_{16}$ is ……
    a) 254, b) 255, c) 256, d) 257

13. The binary equivalent of $(23)_{10}$ is ……
    a) 1111, b) 10000, c) 10111, d) 10001

14. The gray code corresponding to $(101011)_2$ is ……
a) 254, b) 255, c) 256, d) 257

15. The excess-3 code for $(1001)_2$ is …….
a) 1111, b) 0111, c) 1100, d) 1011

16. The excess-3 code for $(1001)_2$ is …….
a) 1111, b) 0111, c) 1100, d) 1011

17. BCD equivalent of $(45)_{10}$ is ……..
a) 0100 0101, b) 0111 1100, c) 101101, d) 10111

18. Decimal equivalent of $(1001\ 0111)_{BCD}$ is ……..
a) 79, b) 97, c) 99, d) 77

19. 1's complement is of $(101010)_2$ is ……..
a) 101010, b) 010101, c) 11100, d) 001100

20. 2's complement is of $(101110)_2$ is ……..
a) 101110, b) 010001, c) 10001, d) 010010

Chapter 2: Logic gates:

1. The NOT gate has ……. inputs
   a) 1, b) 2, c) 0, d) 3

2. Any logic gate has ……..outputs.
   a) 0, b) 1, c) 2, d) 3

3. In OR gate output is logic 0 if inputs A & B are
   a) 0 0, b) 0 1, c) 1 0, d) 1 1

4. In AND gate output is logic 1 if inputs A & B are
   a) 0 0, b) 0 1, c) 1 0, d) 1 1

5. In NAND gate output is logic 0 if inputs A & B are
   a) 0 0, b) 0 1, c) 1 0, d) 1 1

6. In NOR gate output is logic 1 if inputs A & B are
   a) 0 0, b) 0 1, c) 1 0, d) 1 1

7. NAND gate is combination of ……
   a) NOT and NOT, b) AND & NOT, c) AND & OR, d) AND & AND

8. Which of the following gates is a basic gate ……
   a) NOT, b) NOR c) NAND, d) EX-OR
9. Which of the following gates is a not a basic gate ……
   a) NOT, b) AND c) OR, d) NAND

Chapter 3: Boolean algebra

Boolean Operations, Rules and laws of Boolean algebra, DeMorgan's theorems, minterms, maxterms, SOP and POS form of Boolean expressions, Simplification of Boolean Expressions, Karnaugh map [K-map] (up to four variables only)

1. $0 \cdot 1$ is equal to
   a) 0, b) 1, c) 10, d) 11

2. $A \cdot \overline{A}$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

3. $A + \overline{A}$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

4. $\overline{\overline{A}}$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

5. $A \cdot 1$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

6. $A \cdot 0$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

7. $A+0$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

8. $A+1$ is equal to
   a) A, b) 1, c) 0, d) $\overline{A}$

9. $\overline{(A+B)}$ is equal to
   a) $\overline{A} + \overline{B}$, b) $\overline{A} \cdot \overline{B}$, c) $\overline{A \cdot B}$, d) $A \cdot B$

10. $\overline{(A \cdot B)}$ is equal to
    a) $\overline{A} + \overline{B}$, b) $\overline{A} \cdot \overline{B}$, c) $A \cdot B$, d) $A+B$

11. $A+B = B+A$ is called……
    a) Associative law, b) Commutative law,
    c) Distributive law, d) law of identity

12. $A \cdot B = B \cdot A$ is called……
    a) Associative law, b) Commutative law,
    c) Distributive law, d) law of identity

13. $A \cdot (B+C)$ = ……
    a) $A+B+C$, b) $A \cdot B \cdot C$, c) $A \cdot B + A \cdot C$, d) $A+(B \cdot C)$

14. $A\cdot (B+C)$ = ……

a) A+B+C, b) $A\cdot B\cdot C$, c) $A\cdot B+A\cdot C$, d) $A+(B\cdot C)$

15. Following is the statement of De Morgan's theorem ……..

a) $\overline{A\cdot B} = \overline{A} + \overline{B}$, b) $A\cdot (B+C) = A\cdot B+A\cdot C$,

c) $A\cdot B = B\cdot A$, d) A+B = B+A

16. Following is the statement of De Morgan's theorem ……..

a) $\overline{(A+B)} = \overline{A}\cdot\overline{B}$, b) $A\cdot (B+C) = A\cdot B+A\cdot C$,

c) $A\cdot B = B\cdot A$, d) A+B = B+A

17. BCD equivalent of $(45)_{10}$ is ……..

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Chapter 4: Combinational logic circuits

AND-OR logic, AND-OR-NOT logic, Ex-OR gate, Ex-NOR gate, NAND and NOR gate as universal building blocks, Half adder, Full adder, Half subtractor, full subtractor, 4 bit parallel adder and subtractor, 2's complement adder /subtractor, 3 bit binary decoder, decimal to BCD encoder, 8 to 1 multiplexer, 1 to 8 demultiplexer

1. Following gate is called universal building block ……..
   a) NOT, b) AND, c) NAND, d) OR

2. Following gate is called universal building block ……..
   a) NOT, b) AND, c) NOR, d) OR

3. Half adder adds ……. Number of binary bits.
   a) one, b) two, c) three, d) zero

4. Full adder adds ……. Number of binary bits.
   a) one, b) two, c) three, d) zero

5. The base of binary number system is ……
   a) 2, b) 8, c) 16, d)10

6. The base of hexadecimal number system is ……
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