

Question

Calculate the following:-

1. $(10011001)_2 + (100111)_2$
2. $(1011101)_2 + (1000000)_2$
3. $(101101)_2 * (101100)_2$
4. $(1111100)_2 / (10)_2$

State and prove the Following:

1. AND Law
2. Distributive law
3. Commutative Law

Reduce the following SOP function Using K- Maps and draw the circuit diagram-

$$F(A, B, C, D) = \sum m(0, 1, 2, 5, 7, 8, 9, 10, 13, 15)$$

Explain the following with the help of truth table and logic gate diagram :

1. OR Gate
2. NOR Gate
3. XOR Gate
4. NAND Gate

Using Boolean identities, reduce the given Boolean expression:

1. $F(X, Y, Z) = X'Y + YZ' + YZ + XY'Z'$
2. $F(ACD) = (A + C)(AD + AD') + AC + C$

Explain the concept of Daisy Chaining bus arbitration technique

Explain the concept of Computer Architecture? Elaborate on the components of the CPU.

Draw symbol and write the truth table of JK flip flop.

What are the Characteristics of Memory Systems?

Differentiate between Combinational and Sequential circuits.with example

Write a short note on the Input/Output module.

Describe optical Memory in brief.

Convert the following:-

1. $(101101101)_2 = (?)_{10}$
2. $(1F772)_{16} = (?)_8$
3. $(111001010000)_2 = (?)_{16}$
4. $(27665)_8 = (?)_{10}$
5. $(278)_{10} = (?)_{16}$

Design and explain Half Adder and Half Subtractor ?

Convert the following into :-

1. $(1101001)_2$ into Gray code
2. $(786)_{10}$ into XS- 3
3. $(110\ 101\ 111\ 011)$ BCD to Gray code
4. $(0101\ 0011)_{BCD}$ to Binary

What is Encoder and Decoder? Describe in detail with the help of circuit diagram .

Reduce the following POS function Boolean function Using K-maps and Draw the circuit diagram- $f(P, Q, R, S) = \sum m(0,$

Explain the concept of Multiplexer and Demultiplexer ? State the principles of demultiplexer and Multiplexer.

Discuss in detail :-

- 1) Minterm
- 2) Maxterm
- 3) Sum of Product
- 4) Product of Sum

What are Combinational Circuits? Differentiate between Synchronous and Asynchronous sequential Circuits.

Simplify the sum of product form for the Boolean expressions: 1. $(A + B' + C')(A + B' + C)(A + B + C')$ 2. $(A'BC + AB'C' + A'B'C' + AB'C + ABC)$
What are Adders? Explain types of adders in detail with the help of diagrams and logic tables?
Explain the concept of Computer Organization. Elaborate on the vacuum tube era and integrated chips era of computers.
Describe the concept of Polling Bus Arbitration in detail.
Convert the following:- 1. $(101101011)_2 = (?)_{16}$ 2. $(1FA73)_{16} = (?)_8$ 3. $(195)_{10} = (?)_{16}$ 4. $(27665)_8 = (?)_2$ 5. $(278)_{10} = (?)_{16}$
Describe the working of JK Flip Flop with +ve and -ve clock triggering.
Calculate the following:- 1. $(10011001)_2 + (100111)_2$ 2. $(1011101)_2 + (1000000)_2$ 3. $(101101)_2 * (101100)_2$ 4. $(1111100)_2 / (10)_2$
Elaborate the concept of Internal and External Memory.
What is Input/Output module? Explain the types of communication system in I/O module.
Convert the following into :- $(1101001)_2$ into Gray code $(786)_{10}$ into XS-3 $(0110\ 0101\ 0111\ 0011)$ BCD to XS-3
What is optical memory? Explain working of optical memory with the help of a diagram?
Explain Harvard's structure of the CPU with the help of a diagram.
Reduce the following Using K-maps and Draw the circuit diagram- $F(A, B, C, D) = \sum m(0, 1, 2, 4, 5, 7, 10, 15)$
State and Explain Associative Law and Distributive Law.
Convert the following:- 1. $(111111110001)_2 = (?)_{16}$ 2. $(1AFD3)_{16} = (?)_8$ 3. $(195)_{10} = (?)_8$ 4. $(541)_8 = (?)_2$ 5. $(194.11)_{10} = (?)_{16}$
Write a short note on DMA (Direct Memory Access).
Using Boolean identities, reduce the given Boolean expression: 1. $F(A, B, C) = A'B + BC' + BC + AB'C'$ 2. $(A + B + C)(A + B + C)(A + B + C)$
What is a Bus? List down types of bus present inside the CPU and explain their purposes?
What are Sequential Circuits. Elaborate on the concept of SR Flip Flop.
How can you compare Magnetic tape memory from optical memory?
Calculate the following:- 1. $(11011011)_2 / (1010)_2$ 2. $(1011101)_2 * (100110)_2$ 3. $(101101)_2 * (101100)_2$

4. $(1010011)_2 - (110001)_2$
Describe the concept of Bus Arbitration. Explain the working of Independent Requesting bus arbitration technique
List and explain the characteristics of Memory.
Convert the following into :-
1. $(1101001011011)_2$ into Gray code
2. $(961)_{10}$ into XS-3
3. $(101000111)_{\text{Gray}}$ to BCD
Explain Von-Neumann's detailed structure of the CPU with the help of a diagram.
State and Explain redundancy theorem and Transposition theorem.
Describe and explain the history of microprocessor.
Explain the concept of CD and DVD as a memory.
Explain the following with the help of truth table and logic gate diagram :
1. OR Gate 2. NOR Gate
3. XOR Gate 4. NAND Gate
State and explain the concept of analog and digital signals in Computer Organization Architecture.
Reduce the following POS function Using K-maps and Draw the circuit diagram
$F(A, B, C, D) = \sum(0, 1, 3, 5, 7, 8, 9, 11, 13, 15)$
State the different Boolean expression laws.
Calculate the following:-
1. $(11011011)_2 / (1010)_2$
2. $(10110011)_2 * (100110)_2$
3. $(1111010)_2 - (111101)_2$
4. $(1100011)_2 - (100100)_2$
Using Boolean identities, reduce the given Boolean expression and draw
1. $F(A, B, C) = A'BC + A'BC' + AB'C' + AB'C$
2. $F(ABC) = (A + B)(A + C)$
Explain the structure of -
1. CPU
2. Control unit
What are Memory Address Register and Data Register? Explain the working and purpose of Memory Address Register and
Convert the following:-
1. $(101101011.1010)_2 = (?)_{16}$
2. $(1FA73)_{16} = (?)_8$
3. $(95.30)_{10} = (?)_{16}$
4. $(5543)_8 = (?)_2$
5. $(278.11)_{10} = (?)_{16}$
State and Explain the concept of SRAM and DRAM in brief.
1. $(1F62)_{16}$ into Gray code
2. $(786)_{10}$ into XS-3
3. $(110\ 101\ 111\ 011)$ Gray to $(?)_{16}$
4. $(0101\ 0011)_{\text{BCD}}$ to
What are the different memory access methods? Elaborate
Write a note on ROM and types of ROM.
Explain the concept of Computer Organization. Elaborate on the Transistors era and integrated chips era of computers.
What are Combinational Circuits . State and explain any two examples of combinational circuits.
Describe the concept of clock signal in sequential circuit. State the different types of clock triggering.

. 1, 4, 5, 7, 8, 9, 12, 13, 15).

with the help of diagram.

1 Data Register.