

Sl. No.	Questions
Class 1 : Boolean Algebra and Logic gates	
1	State basic Boolean Laws
2	Define Logic Gate. With Truth Table explain OR and AND Logic
3	What are the difference between Basic Gates and Universal Gates? Give examples
4	Realize OR Gate using Universal Gate (NAND).
5	Realize AND Gate using Universal Gate (NAND).
Class 2: Basic Theorem and Properties of Boolean Algebra	
1	State De-Morgan's Law and Prove using Truth Table
2	State and Prove Associative Property for Boolean Algebra.
3	State and Prove Commutative Property for Boolean Algebra
4	State and Prove Distributive Property for Boolean Algebra
5	State and Prove Consensus Theorem and Absorption Property of Boolean algebra using Truth Table.
Class 3: Boolean Functions, Canonical and Standard Form	
1.	Write the Boolean expression for the function $f(A,B)=\{2,3,5\}$ using Standard SOP
2.	Write the Boolean Expression for $Y= AB'C'+A'B'C'+A'B'+AC'$ in Standard SOP Form
3.	Write the Boolean Expression for $Y= (A+B')(A'+C')$ in Standard SOP Form
4.	Realize the Standard SOP Expression $Y= ABC'+AB'C$ using Basic Gates
5.	Write the Standard SOP Expression for $Y= AB+AB'C$ and realize using Basic Gates
Class 4: Other Logical Operation, Digital Logic gates (XOR and XNOR)	
1.	Define XOR and XNOR Logic Operation
2.	Realize XOR Gate using Basic Gates
3.	Realize XNOR Gate using Basic Gates
4.	Realize XOR using only NAND Gates
5.	Realize XNOR using only NOR Gates
Class 5: Realization of Boolean expression using Universal Gates	
1	Simplify and realize the following Expression using $Y= A'B+A'C+AB$ Using Universal Gates
2	Realize the Standard SOP Expression $Y= ABC'+AB'C$ using Universal Gates
3	Write the Standard SOP Expression for $Y= AB+AB'C$ and realize using Universal Gates
4	Realize the following Expression using $Y= A+BC$ Using Universal Gates
5	Simplify and Realize $Y=(A'B+A'+AB)'$ using Universal Gate
Class 6: Problems on Boolean algebra	

1	Simplify the following Boolean expression. $Y = AB'C' + A'B'C' + A'B' + AC'$
2	Simplify the following Boolean expression $Y = ((A+B'C)(A'+B'+C')(A'+B))'$
3	Simplify the following Boolean expression $Y = AB'C' + A'B'C' + A'B' + AC'$
4	Simplify the following Boolean expression $Y = (A+B'+C)(A'+B+C')(A+B')$
5	Simplify the following Boolean expression $F = A(B+C(AB+AC)')$
Class 7: Combinational Logic Circuits: Half Adder and Full adder	
1	Write the Truth table and logic expressions for Sum and Carry for Half adder
2	Write the Truth table and logic expressions for Sum and Carry for Full adder
3	Realize Half Adder using NAND Gates
4	Realize Full Adder using Basic Gates
5	Realize Full Adder using Two Half Adder.
Class 8: Sequential Logic Circuits: RS- Flip-Flop	
1	Realise SR Flip-Flop with its circuit diagram & explain its working with action table.
Class 9: Flip-Flops - JK, D,T	
1	Realise JK Flip-Flop with its circuit diagram & explain its working with truth table.
2	Design D Flip-Flop using SR Flip-Flop & draw its truth table
3	Show the relevance of T Flip-Flop using JK flip-Flop & draw its block diagram
Class 10: Registers: SISO	
1	Mention the modes of register operations and draw the block diagrams for the same
2	For a Serial In Serial Out (SISO) 4-bit register, with initial data = "0000". Consider data "1101" to be the data loaded onto the register. What will be contents of this register after 5 clock pulses?
Class 11: 3-Bit Synchronous and Asynchronous Counter	
1	Implement a 3 bit Asynchronous down counter using T flip-flops.
2	Implement a 3 bit Asynchronous up counter using T flip-flops.
3	Implement a 3 bit Asynchronous down counter using JK flip-flops.
1	Implement a 3 bit Asynchronous up counter using JK flip-flops
2	
3	
4	
5	
4	

Class 8: Sequential Logic Circuits: RS- Flip-Flop

- 2 Realise SR Flip-Flop with its circuit diagram & explain its working with action table.

Class 9: Flip-Flops - JK, D,T

- 4 Realise JK Flip-Flop with its circuit diagram & explain its working with truth table.
5 Design D Flip-Flop using SR Flip-Flop & draw its truth table
6 Show the relevance of T Flip-Flop using JK flip-Flop & draw its block diagram

Class 10: Registers: SISO

- 3 Mention the modes of register operations and draw the block diagrams for the same
4 For a Serial In Serial Out (SISO) 4-bit register, with initial data = "0000". Consider data "1101" to be the data loaded onto the register. What will be contents of this register after 5 clock pulses?

Class 11: 3-Bit Synchronous and Asynchronous Counter

- 5 Implement a 3 bit Asynchronous down counter using T flip-flops.
6 Implement a 3 bit Asynchronous up counter using T flip-flops.
7 Implement a 3 bit Asynchronous down counter using JK flip-flops.

Implement a 3 bit Asynchronous up counter using JK flip-flops