K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:III
Class:SY	Program:B.Tech
Branch Code:ADS/COM/CSD	Pattern:2023
Name of Course:Digital Electronics and logic Design	Course Code:2301206
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 02 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1 a)	Simplify the given logic function using K Map minimization technique Y=f(A,B,C,D)= ∑m(1,2,6,10,12,13,14,15)+d(0,3,7,8,11)	(6)	CO1
Question No. 2			
2 a)	Design 4 bit Binary to Gray Code Converter	(6)	CO2
Question No. 3			
3 a)	Implement given Boolean Expression using 16:1 Multiplexer: f(A,B,C,D) = ∑m(1,2,5,6,8,9,11,14)	(6)	CO3
	OR		
3 b)	Implement given Boolean Expression using 1:16 Demultiplexer: f(A,B,C,D) = ∑m(0,1,4,5,7,8,9,10,12,15)	(6)	CO3
3 c)	Explain Encoder and Decoder with diagram	(5)	CO3
	OR		
3 d)	Design 3 bit Odd Parity Generator.	(5)	CO3
3 e)	Explain how PAL can be used as PLD	(5)	CO3
	OR		
3 f)	What is PLD? Compare PAL and PLA	(5)	CO3
Question No. 4			
4 a)	Draw and explain 3-bit Ring Counter	(6)	CO4
	OR		
4 b)	Explain T and D flip-flop with neat diagram	(6)	CO4
4 c)	Explain JK Excitation table of JK flip flop with diagram	(5)	CO4
	OR		

4 d)	Explain the concept of Level Triggered Flip Flop.	(5)	CO4
4 e)	Draw and explain 3 bit bidirectional shift register.	(5)	CO4

OR

4 f)	What is clock signal? Explain its importance in triggering of flip flop	(5)	CO4

Question No. 5

5 a)	Design Sequence Detector (without overlap) to detect following sequence using JK Flip Flop: 0111	(8)	CO5

OR

5 b)	Design and realize 3-bit Synchronous UP counter using JK Flip Flop.	(8)	CO5
5 c)	Draw MOD-51 counter using IC 7490	(4)	CO5

OR

5 d)	Draw 3 bit Ripple DOWN Counter using JK Flip Flop.	(4)	CO5
5 e)	Draw and explain the internal structure of IC 7490.	(4)	CO5

OR

5 f)	Explain the design procedure of Sequence generator	(4)	CO5

····· End of question paper·····