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:IV
Class:SY	Program:B.Tech
Branch Code:ETC	Pattern:2022
Name of Course:VLSI Design and Technology	Course Code:ETC222013
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 2 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			
1a)	Explain FPGA with neat architectural block diagram.	(6)	CO1
Question No. 2			
2a)	Write verilog code for full adder in structural modelling and behavioral modelling	(6)	CO2
Question No. 3			
3a)	Design and Implement 4:1 MUX using structural modelling	(8)	CO3
	OR		
3b)	Explain four floors lift controller using verilog HDL code	(8)	CO3
3c)	Write verilog code for full subractor in dataflow modelling. Also show the boolean expression used.	(8)	CO3
	OR		
3d)	Write verilog code for CMOS 3 input NOR gate in switch level modelling	(8)	CO3
Question No. 4			
4a)	Write short notes on : i) CMOS Inverter as not gate and ii) Noise margins in cmos inverter .	(8)	CO4
	OR		
4b)	Design and implement 8:1 MUX using transmission gate	(8)	CO4
4c)	Implement CMOS function Y=ABC+D along with stick diagram	(8)	CO4
	OR		
4d)	Implement Y=[ABCD+EF)]' using CMOS logic. Explain PDN & PUN for A=1,B=0, C=1, D=0, E=1, F=1	(8)	CO4
Question No. 5			
5a)	What is the need of DFT. Explain in detail	(8)	CO5

OR

5b)	Explain clock distribution technique	(8)	CO5
5c)	Explain BIST with neat block diagram	(8)	CO5

OR

5d)	For the given boolean function. extract the truth table with and without faults (S-A-0 at all inputs, S-A-1 at all inputs) Y=AB+CD	(8)	CO5

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