



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

SUMMER-2024	
Exam Seat No.:	
Academic Year:2023-2024	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.

Question No. 1 Attempt following Question

- 1a) Write a short note on concept of PLA and PAL (6) CO1

Question No. 2 Attempt following Question

- 2a) Design and implement a 2:1 Multiplexer in Structural modeling (6) CO2

Question No. 3 Attempt following Question

- 3a) Design and implement 2:4 decoder using data flow modeling along with testbench in verilog HDL (8) CO3

OR

- 3b) Design and implement the following flip flops using behavioral modeling in verilog HDL (8) CO3

a. D Flip Flop b. JK Flip Flop

- 3c) Write verilog code for CMOS 2 input NAND gate in switch level modeling (8) CO3

OR

- 3d) Write HDL description of a full adder using Task (8) CO3

Question No. 4 Attempt following Question

- 4a) Draw CMOS inverter circuit and explain Voltage transfer characteristics (8) CO4

OR

- 4b) What is a transmission gate? Explain briefly. Implement 4:1 MUX using Transmission Gates (8) CO4

4c) Design CMOS logic for $Y=(A+BC+D)'$ (8) CO4

OR

4d) Draw stick diagram and logic diagram for CMOS NOR gate (8) CO4

Question No. 5 Attempt following Question

5a) Explain TAP controller with FSM and its instructions (8) CO5

OR

5b) Explain IEEE 1149.1 architecture in detail (8) CO5

5c) Write short note on supply & Ground bounce (8) CO5

OR

5d) What is the need of boundary scan? Explain boundary scan technique in detail (8) CO5

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