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

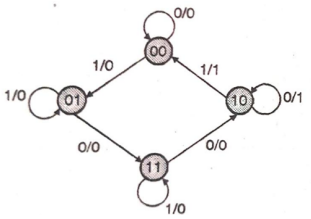
(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:III
Class:SY	Program:B.Tech
Branch Code:ETC	Pattern:2023
Name of Course:Digital System Design with HDL	Course Code:2302203
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 2page(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)	Implement the function F(A,B,C,D)= Σm(0,1,3,5,7,9,12,15) using 8:1 Mux by using folding technique	(6)	CO1
Question No. 2			
2a)	Design MOD 5 UP counter and explain with the help of waveforms	(6)	CO2
Question No. 3			
3a)	Design sequential circuit for the given state diagram using any Flip flop	(8)	CO3



OR

3b)	Design mealy machine sequence detector for following sequence 101 using D flip flop	(8)	CO3
3c)	Define ASM chart. State various types of boxes used for drawing the ASM chart.	(8)	CO3

OR

3d)	Design a circuit which follows following sequence 2-3-4-5-6-7-2	(8)	CO3
Question No. 4			
4a)	Compare TTL and CMOS logic families	(8)	CO4

OR

4b)	What is architecture in VHDL explain with its syntax. Write VHDL code for Half adder	(8)	CO4
4c)	With the help of example explain following statements in VHDL	(8)	CO4

1. If statement

2. Case statements

OR

4d)	Draw and explain CMOS NOR gate.	(8)	CO4

Question No. 5

5a)	Explain different modeling styles in VHDL. Explain different modeling styles in VHDL	(8)	CO5

OR

5b)	Write VHDL code for 2 bit comparator	(8)	CO5
5c)	Write VHDL code for full adder in behavioral modeling style	(8)	CO5

OR

5d)	Write VHDL code for JK Flip flop	(8)	CO5

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