SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Regular & Supplementary Examinations December-2024
VLSI DESIGN
(Electronics & Communications Engineering)

Time: 3 Hours   **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Illustrate the steps involved in NMOS fabrication process with neat sketches.	CO2	L2	6M
	b	Discuss about body bias effect in the NMOS transistor.	CO1	L2	6M

OR

2	a	Derive the relationship between I_{ds} & V_{ds} in saturated region.	CO2	L3	6M
	b	Give the basic steps for IC fabrication.	CO2	L2	6M

UNIT-II

3	a	What are lambda-based design rules? Explain.	CO3	L1	6M
	b	Illustrate design rules for wires and MOS transistors.	CO3	L2	6M

OR

4	a	Illustrate stick diagram of AND-OR-INVERTER in CMOS design Style.	CO3	L2	6M
	b	Explain about Implant and demarcation line in stick diagrams with neat sketches.	CO3	L2	6M

UNIT-III

5	a	What is switch logic? Explain with an example.	CO4	L1	6M
	b	Explain about pass transistors logic with an example.	CO4	L2	6M

OR

6	a	What design methods are used in physical design cycle? Explain each term with suitable diagrams.	CO4	L1	6M
	b	What is routing? Explain about different routing techniques.	CO4	L2	6M

UNIT-IV

7		Design an Arithmetic and Logic Unit circuit with four functions using multiplexers and explain its operation.	CO4	L3	12M

OR

8	a	Compare different types of memory elements.	CO4	L4	6M
	b	Develop the 4x4 array multiplier.	CO4	L3	6M

UNIT-V

9	a	Illustrate the architecture of FPGA with neat sketch.	CO5	L2	6M
	b	Discuss about the merits of FPGA over other PLD architectures.	CO5	L2	6M

OR

10	a	What is testing? Explain any three test principles.	CO5	L1	6M
	b	What is controllability and observability? Give examples to explain it.	CO5	L2	6M

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