

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, April - 2024

**VLSI DESIGN
(ECE)**

Time: 3 hours

Max. Marks: 70M

**Answer ONE Question from each Unit
All Questions Carry Equal Marks**

Q. No.	Questions	BTL	CO	Marks
UNIT – I				
1.	a) Derive the relationship between I_{DS} and V_{DS}	K3	CO1	7M
	b) Draw the VLSI Design flow and explain the operation of each step-in detail.	K2	CO1	7M
OR				
2.	a) Draw the stick diagram for three input AND gate.	K2	CO1	7M
	b) Explain the operation of BICMOS Inverters and its alternative circuits	K2	CO1	7M
UNIT – II				
3.	a) Explain the concept of driving large capacitive loads with necessary equations	K2	CO2	10M
	b) Write a short note on limitations of scaling in MOS circuits	K2	CO2	4M
OR				
4.	a) Define sheet resistance and its effect on inverter circuits	K2	CO2	7M
	b) Explain the concept of limits due to sub threshold currents and current density.	K2	CO2	7M
UNIT – III				
5.	a) What is modeling? How to model FET device	K2	CO3	7M
	b) Explain the operation of single stage amplifier with diode connected load	K2	CO3	7M
OR				
6.	a) Explain briefly about modelling of transistor	K2	CO3	7M
	b) Write a short note on current sources and sinks	K2	CO3	7M
UNIT – IV				
7.	a) What is the impact of choosing a logic style in Dynamic Design?	K2	CO4	7M
	b) With a neat diagram explain the operation of reduced clock load master slave registers	K2	CO4	7M
OR				
8.	a) Give the difference between Latch Vs Register and explain the concept of Latch based design.	K2	CO4	10M
	b) Explain the concept of rationed logic	K2	CO4	4M
UNIT – V				
9.	a) Explain briefly about FPGA technologies	K2	CO5	7M
	b) Describe the concept of high-K and its use in metal gate technology	K3	CO5	7M
OR				
10.	a) Mention different types of FPGA families and explain their significance.	K3	CO5	10M
	b) Write a short note on TFET	K2	CO5	4M