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Bengaluru

Mid Term Examinations - October 2026

Date: 06/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: ECE6018 **Course Name:** Low Power VLSI Design

Semester: Third Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	50	40

PART-A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Glitch power has become a critical consideration in terms of overall power consumption. Explain glitch power dissipation in CMOS Low Power Design.	2	CO1	BT1
2	Name the different static and dynamic power dissipation sources.	2	CO1	BT1
3	A CMOS circuit has C_L= 50pF, f=200MHz, and α=0.25. Calculate the dynamic power for VDD=0.9V.	2	CO1	BT2
4	Define signal entropy. State the importance of signal entropy in probabilistic power analysis.	2	CO1	BT1
5	Define Monte Carlo simulation. Mention two applications of Monte Carlo simulation in power estimation.	2	CO1	BT2

PART-B: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Derive the expression for short- circuit power dissipation in CMOS.	10	CO1	BT2
7	Determine the switching probability and activity factor for a two-input OR gate.	10	CO2	BT2

PART-C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Determine the dimension of MOSFET for the boolean expression **(***A.B+E(C+D))* ' for the same propagation delay. Given the inverter with PMOS dimensions W/L = 3/1 and NMOS dimensions W/L = 2/1.	10	CO1	BT3
9	Determine the switching activity of the boolean function YB=A.B'+C. Given PA=PB=PC=.5	10	CO2	BT2

PART-D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Derive the expression for dynamic power dissipation in CMOS.	10	CO1	BT3
11	Determine the switching probability and activity factor for a two-input X-NOR gate.	10	CO2	BT3

PART-E: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

12	Explain the different components of static (leakage) power dissipation in a MOSFET with relevant diagrams.	10	CO1	BT2
13	Explain the Monte Carlo simulation technique for power estimation. Describe the basic steps involved in performing Monte Carlo-based analysis.	10	CO2	BT3