

**UNIT-1**

1. A. Write short note on Dynamic behavior of VLSI Design. [7 Marks; CO1; Understand]
B. Demonstrate type of power consumption in VLSI circuits. [7 Marks; CO1; Understand]
(OR)
2. A. Demonstrate the following quality metrics of digital design
(i) Functionality (ii) Power [7 Marks; CO1; Understand]
B. Demonstrate the relationship between cost and robustness in VLSI design. [7 Marks; CO1; Understand]

UNIT-2

3. A. What is pass transistor logic? Construct 2x1 MUX using pass transistor logic. [7 Marks; CO2; Understand]
B. Demonstrate how the rationed logic reduce the number of transistors with an example. [7 Marks; CO2; Understand]
(OR)
4. A. Describe types of IR drop in physical design. [7 Marks; CO2; Understand]
B. Demonstrate the ESD protection and its methods. [7 Marks; CO2; Understand]

UNIT-3

5. A. What is FinFET? Give the advantage of FinFET over FET. [7 Marks; CO3; Understand]
B. Write short note on (i) Metal Gate Technology (ii) TFET [7 Marks; CO3; Understand]
(OR)
6. A. Explain short channel effect with neat sketch. [7 Marks; CO3; Understand]
B. What is Giga-scale dilemma? Give efficient solutions to the Giga-scale dilemma. [7 Marks; CO3; Understand]

UNIT-4

7. A. Draw differential pair sensing common mode input and derive common mode voltage gain [7 Marks; CO4; Understand]
B. Explain about differential pair common-mode response in the presence of resistor mismatch, with neat sketch. [7 Marks; CO4; Understand]
(OR)
8. A. With a neat diagram, explain the working of a single stage CS amplifier. [7 Marks; CO4; Understand]
B. Draw CS Stage with Current-Source Load and derive equation for voltage gain. [7 Marks; CO4; Understand]

UNIT-5

9. A. What is need of cascade current mirror? State the advantages of cascode current mirrors. [7 Marks; CO5; Understand]
B. Explain construction and operating principle of cascade current mirror with neat sketches. [7 Marks; CO5; Understand]
(OR)
10. A. Calculate the transfer function and the input impedance of common gate amplifier at high frequencies. [7 Marks; CO5; Understand]
B. Describe types of Noise in amplifier circuits. State the Noise Analysis Procedure. [7 Marks; CO5; Understand]