Course Code: D2515702

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

I – M.Tech. I - Semester Regular Examinations (BR25), Feb - 2026

ANALOG CMOS CIRCUIT DESIGN (VLSI)

Time: 3 hours Max. Marks: 60

Answer any Five Questions One Question from One UNIT
ALL the Questions Carry Equal Marks

	UNIT-I	**Marks**	**CO**	**BL**
1.a)	Explain about Integrated circuit Layout and SPICE Models.	6M	CO1	L2
b)	Draw the Simple MOS Large-Signal Model transistor. Briefly explain each component.	6M	CO1	L3
	OR			
2.a)	Explain about the CMOS device Model and Explain about the computer simulation modelling.	6M	CO1	L2
b)	Draw and explain the structure of a basic MOS Capacitor and resistor.	6M	CO1	L3
	UNIT-II	**Marks**	**CO**	**BL**
3.a)	Discuss about Illustration of the hierarchy of analog circuits for an operational amplifier.	6M	CO2	L3
b)	Explain Current Sinks and Sources with Current–voltage characteristics.	6M	CO2	L2
	OR			
4.a)	Define MOS Switch and Discuss about application of an MOS switch.	6M	CO2	L3
b)	Explain in detail Current and Voltage References and Bandgap Reference.	6M	CO2	L2
	UNIT-III	**Marks**	**CO**	**BL**
5.a)	Explain Source follower with example of its role as a buffer and its input-output characteristics.	6M	CO3	L2
b)	Draw and explain Simple folded cascode folded cascode with proper biasing and folded cascode with NMOS input.	6M	CO3	L3
	OR			
6.a)	Explain Common-Source Stage with Triode Load and Source Degeneration with neat circuits.	6M	CO3	L4
b)	Explain about Common-Source Stage with Diode-Connected Load with small-signal equivalent circuit.	6M	CO3	L2
	UNIT-IV	**Marks**	**CO**	**BL**
7.a)	Discuss about Various types of inverting CMOS amplifiers.	6M	CO4	L3
b)	Explain Statistical Characteristics of Noise with Noise Spectrum and Amplitude Distribution.	6M	CO4	L2
	OR			

8.a)	Explain Statistical Characteristics of Correlated and Uncorrelated Sources and Signal-to-Noise Ratio.	6M	CO4	L2
b)	Explain about Noise in Single-Stage Amplifiers with Common-Gate Stage.	6M	CO4	L4

	UNIT-V	**Marks**	**CO**	**BL**
9.a)	Discuss about Compensation of Operational Amplifiers with Frequency and phase response of a second-order system.	6M	CO5	L5
b)	Explain about Design of Operational Amplifiers with Boundary conditions and Requirements.	6M	CO5	L2
	OR			
10.a)	Discuss about Cascoding of the first stage of the two-stage Operational Amplifier.	6M	CO5	L3
b)	Define CMRR and explain Configuration for simulating the common-mode gain.	6M	CO5	L3

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