O.P.Code: 23EC0459	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech.II Year II Semester Regular & Supplementary Examinations March/April-2026
ANALOG CIRCUITS
(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	List the applications of clampers.	CO1	L2	2M
	b	Define operating point.	CO1	L2	2M
	c	Sketch the Equivalent circuit of a transistor using h-Parameters.	CO2	L2	2M
	d	Express the negative feedback amplifier.	CO2	L2	2M
	e	What is the necessary condition for sustained oscillations?	CO3	L2	2M
	f	What is slew rate?	CO3	L1	2M
	g	Define common mode Rejection Ratio.	CO4	L2	2M
	h	List out the specifications of 741 IC.	CO5	L1	2M
	i	Draw the pin configuration of 555 timer.	CO5	L2	2M
	j	Define monostable multivibrator.	CO6	L1	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	Explain positive and negative clippers with neat sketches.	CO1	L1	5M
	b	Explain Thermistor & Sensistor compensation techniques with circuit diagram.	CO1	L2	5M

OR

3	a	List out the different types of clipping and clamping circuits.	CO1	L1	5M
	b	Draw the collector to base bias circuit and derive an expression for the stability factor.	CO1	L2	5M

UNIT-II

4	a	Sketch the four types of feedback amplifier topologies.	CO2	L1	5M
	b	A CE amplifier has the h-parameters given by hie = 1000 Ω, hre = 2x10-4, hfe=50 and hoe = 25 μ mho .if both the load and source resistances are 1KΩ, determine the current gain & voltage gain.	CO2	L2	5M

OR

5	a	Discuss the frequency response of CE amplifier with a neat diagram.	CO2	L1	5M
	b	Describe the effect of input resistance for current shunt feedback amplifier.	CO2	L2	5M

UNIT-III

6	a	Determine the condition for sustained oscillations for an RC phase shift Oscillator with necessary circuit diagrams.	CO3	L1	5M
	b	Explain DC characteristics of op-amp.	CO2	L2	5M

OR

7	a	Draw the circuit diagram of Colpitts crystal oscillator using BJT and show the expression for frequency of oscillations.	CO4	L2	5M
	b	An op-amp has a slew rate of 2V/μs. What is the maximum frequency of an output sinusoidal its peak value of 5V at which the distortion sets in due to the slew rate limitation?	CO5	L4	5M

UNIT-IV

8	a	Draw the circuit diagram of subtractor using Op-amp and explain its operation.	CO5	L3	5M
	b	How does the sample and hold circuit operate during the "sample" mode.	CO4	L1	5M

OR

9	a	Design an op-amp differentiator that will differentiate an input signal with fmax =100 Hz.	CO4	L6	5M
	b	Draw the circuit diagram of Non-Inverting comparator & explain its operation.	CO4	L5	5M

UNIT-V

10	a	Explain about PLL principle in detail and block diagram.	CO5	L5	5M
	b	Discuss the parameters specifications of DAC/ADC.	CO4	L6	5M

OR

11	a	The basic step of a 9 bit DAC is 10.3 mV. If "000000000" represents 0 V. What output is produced if the input is "101101111"?	CO5	L2	5M
	b	Explain in detail about R-2R DAC with a neat diagram.	CO5	L2	5M

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