

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)
B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025
Fourth Semester
Electronics and Communication Engineering
EC3451 - Linear Integrated Circuits
Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Draw the diagram of basic current mirror circuit.	L1	1	2
2.	How would you define slew rate and what causes the slew rate?	L1	1	2
3.	Show the op-amp differentiator circuit with necessary equation.	L2	2	2
4.	Write any two applications of clipper and clamper.	L1	2	2
5.	What is analog multiplier IC? Mention its applications.	L1	3	2
6.	Demonstrate why VCO is called voltage to frequency converter?	L2	3	2
7.	Illustrate the operation of high-speed sample and hold circuits.	L2	4	2
8.	List out the advantages and drawbacks of a dual-slop ADC.	L1	4	2
9.	Outline the basic principle of operation of saw-tooth wave generator.	L2	5	2
10.	Mention the applications of voltage to frequency converters.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Explain the working principle of BJT differential amplifier with active load. Derive the expression for CMRR of an emitter coupled differential amplifier.	L2	1	16
	Or			
	b Outline the internal block diagram of an op-amp. Derive the DC characteristics of an operational amplifier and elaborate in detail.	L2	1	16
12.	a With a suitable circuit diagram, explain the operating principle of an instrumentation amplifier and derive its gain.	L2	2	16
	Or			
	b Describe the Schmitt trigger using Op-Amp and explain about the working of inverting and non-inverting Schmitt trigger in detail.	L2	2	16
13.	a With neat diagram, explain the operation of a variable trans conductance multiplier circuit. Derive the expression for its output voltage.	L2	3	16
	Or			
	b How would you describe the block diagram of PLL and derive the expression for Lock range and capture range.	L2	3	16

14.	a	Compare binary weighted DAC with R-2R ladder network DAC. With a neat circuit diagram, explain the operation of R-2R D/A converter.	L4	4	16
Or					
	b	How would you categorize A/D converters? Explain the working principle of successive approximation type ADC.	L4	4	16
15.	a	Draw the circuit diagram of a three terminal fixed and adjustable voltage regulators and explain its operation.	L2	5	16
Or					
	b	Explain the following:	L2	5	16
		i) Audio power amplifier			
		ii) Isolation amplifier			
		iii) Opto-couplers			