PRN:		Course Code :	ECE303R1

Third Year **B. Tech** End Semester Examination Winter 2023

Linear Integrated Circuits & Applications

Day and Date: Friday, 01/12/2023 Max Marks: **100**

Time : 10.30 am to 1-30 PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CLO
Q.1		**Attempt the following**			
	a)	Derive expression for voltage gain of voltage shunt feedback amplifier using Op-Amp.	08	L4	CLO4
	b)	With block diagram explain 741 operational Amplifier.	08	L2	CLO1
		OR			
	b)	Explain differential amplifier in open loop configuration.	08	L2	CLO1
Q.2		**Attempt the following**			
	a)	With neat circuit diagram explain summing and averaging amplifier using op-amp.	08	L3	CLO4
	b)	Describe the operation of voltage to current converter using Operational Amplifier with floating load.	08	L3	CLO4
		OR			
	b)	With waveform diagram explain and derive expression for Integrator circuit using Op-Amp.	08	L3	CLO4
Q.3		**Attempt any two from the following**			
	a)	Derive expression for first order Butterworth high pass filter.	08	L3	CLO3
	b)	With neat circuit diagram explain narrow band reject filter .	08	L3	CLO3
	c)	Design a wide band pass filter circuit with f_L=200Hz,f_H=1kHz and a passband gain of 4 and determine the value of Q and f_C. Assume the value of C=0.05μF.	08	L4	CLO3
Q.4		**Attempt any two from the following**			
	a)	With neat circuit diagram, explain the operation of RC phase shift oscillator circuit using Op-Amp. Mention the gain of the circuit and frequency of oscillation.	08	L2	CLO2
	b)	What is oscillator. Explain Barkausen criteria in oscillators	08	L2	CLO2
	c)	Using Op-amp explain operation of Colipits oscillator with neat circuit diagram	08	L2	CLO2
Q.5		**Attempt any two of the following**			
	a)	Explain with neat diagram the basic comparator circuit using op-amp	09	L1	CLO1
	b)	What is Hysteresis. With neat circuit diagram and waveform explain the operation of Schmitt trigger.	09	L1	CLO1
	c)	With suitable examples explain clamper circuit using Op-Amp.	09	L1	CLO1
Q.6		**Attempt any two of the following**			
	a)	Explain sawtooth wave generator with waveform diagram.	09	L2	CLO2
	b)	What is Multivibrator. Explain how triangular wave is generated using Op-amp	09	L2	CLO2
	c)	Explain voltage to frequency converter using Op-Amp.	09	L2	CLO2

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