

EXTC | Scheme -1 17/12/2022

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

DEC 2022

(B. Tech) Program: Electronics and Telecommunication Engineering

Examination: SY Semester: IV

Course Code: 1UEXC403

Course Name: **Linear Integrated Circuit**

Duration: 03 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight:	12		
i)	Compare RC phase shift oscillator and wein bridge oscillator.	2	2	U
ii)	Write features of IC 555.	2	4	R
iii)	Draw block diagram of voltage controlled oscillator.	2	6	U
iv)	Write the features of IC 317/ IC 337.	2	5	R
v)	Compare comparator and Schmitt trigger.	2	3	U
vi)	Explain half wave precision rectifier.	2	2	U
vii)	Define input bias current and input offset voltage.	2	1	R
viii)	Draw functional block of operational amplifier.	2	1	U
Q.2	Solve any four questions out of six.	16	1 - 6	
i)	Design a circuit for $V_O = V_1 + V_2$ using single op-amp and few resistors	4	1	A
ii)	Explain the operation of a peak detector circuit.	4	2	U
iii)	Derive expression for inverting amplifier using closed loop configuration.	4	3	A

iv)	Draw and explain the functional diagram of the IC723 voltage regulator.	4	4	U
v)	Draw block diagram and explain the operation of PLL (phase locked loop). State its applications.	4	6	U
vi)	Write a short note on the pulse width modulator.	4	5	R
Q.3	Solve any two questions out of three.	16		
i)	Draw a neat circuit diagram of an instrumentation amplifier using 3 op amps. Derive the expression for its gain. How can its gain be varied? What are its advantages over a difference amplifier using single op-amp?	8	2	A
ii)	Explain working of 555 as a monostable multivibrator and Find the values width of 5ms, With the help of a neat diagram and waveforms at the trigger input, across the capacitor and at the output,	8	4	A
iii)	Write short note on switching regulator with proper block diagram ,	8	6	U
Q.4	Solve any two questions out of three.	16		
i)	Draw the circuit diagram of a triangular wave form generator using op-amp and explain its working with the help of waveforms.	8	3	A
ii)	Draw a neat circuit of voltage to current convertor with grounded load and derive the expression for the output current.	8	1	A
iii)	Design band pass filter with $F_L = 200 \text{ HZ}$ & $F_H = 1 \text{ KHZ}$ and pass band gain = 4 calculate quality factor.	8	5	A