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

End Semester Exam

MAY 2022

(B. Tech) Program: Electronics and Telecommunication Engineering

Examination: SY Semester: IV

Course Code: 1UEXC403 and 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)	Draw the voltage follower circuit using an op-amp and show that its gain is unity.	2	1	A
ii)	State barkhausen's criteria in oscillator.	2	2	R
iii)	Draw the circuit diagram of I to V convertor using op -amp.	2	2	A
iv)	Compare between zero crossing detector and Schmitt trigger.	2	3	U
v)	Draw pin configuration of PLL IC 565.	2	6	A
vi)	Draw functional block of IC 555.	2	4	A
vii)	Explain 78XX and 79XX with neat diagram.	2	5	A
viii)	Define CMRR and Slew rate.	2	1	R
Q.2	Solve any four questions out of six.	16	1 - 6	
i)	Design a 2 nd order Butterworth HPF for cut off frequency of 1kHz and pass band gain of AF = 2.	4	2	A
ii)	Explain the working of the comparator circuit, with a neat circuit diagram.	4	3	U

iii)	Draw neat circuit diagram and explain the operation of monostable multivibrator using IC 555.	4	5	A
iv)	Draw the block diagram and explain the operation of the switching Regulator.	4	5	A
v)	Explain the use of PLL as a frequency Multiplier	4	6	U
vi)	Derive expression for non-inverting amplifier using closed loop configuration.	4	1	A
Q.3	Solve any two questions out of three.	16		
i)	Design an Astable multivibrator using 555 timers for a frequency of 1KHz and a duty cycle of 70 %. Assume $c=0.1\mu f$	8	4	A
ii)	Derive an expression for subtractor as op – amp and also Design a circuit to perform the difference between two signals V1 & V2 which is to be amplified by factor of 10.	8	1	A
iii)	Draw functional block diagram of IC 723 and explain its working as low voltage regulator and high voltage regulator .(HVLC) & (HVHC)	8	5	A
Q.4	Solve any two questions out of three.	16		
i)	Design a practical integrator to operate at $f = 4\text{KHZ}$ and gain is equal to 2.	8	2	A
ii)	Derive the expression for the threshold levels and explain how they can be varied. With help of a neat diagram and voltage transfer characteristics explain the working of a non-inverting Schmitt trigger,	8	3	A
iii)	Derive expression for frequency of oscillation of RC phase shift oscillator .design the phase shift oscillator so that $f_o = 200\text{HZ}$.	8	3	A