



End Semester Examination – Nov/Dec – 2016

Code : 14EC2008
Sub. Name : LINEAR INTEGRATED CIRCUITS

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Design an adder-subtractor circuit using op-amp to get the output $V_0 = (V_3 + V_4) - (V_1 + V_2)$. Prove the expression by using super position principle.	CO1	10
	b.	Explain the operation of the basic differentiator. What are the limitations and how it is compensated in practical differentiator?	CO1	10
(OR)				
2.	a.	Explain the working of precision diode as half wave rectifier and full wave rectifier with necessary circuits and input/output waveforms.	CO1	12
	b.	Discuss how practical integrator overcomes the issues regarding ideal integrator.	CO1	8
3.	a.	Explain in detail with a neat circuit to prove $V_0 = -\frac{kt}{q} \ln \frac{V_i}{V_{ref}}$	CO1	12
	b.	In the schmitt trigger $R_2 = 100\Omega$, $R_1 = 50k\Omega$ $V_{ref} = 0V$, $V_i = 1V_{pp}$, $V_{sat} = \pm 14V$. Determine V_{UT} and V_{LT}	CO1	8
(OR)				
4.	a.	Derive the expression for time constant for a monostable multivibrator using IC741 opamp with necessary explanation and timing diagrams.	CO1	10
	b.	Multiplier IC configured as Divider. Justify with proper circuit	CO1	10
5.	a.	Explain the operation of RC phase shift oscillator and derive the expression of frequency and gain.	CO1	12
	b.	Design a second order Butterworth high pass filter having low cut off frequency 1kHz.	CO1	8
(OR)				
6.	a.	Explain the operation of Wien Bridge oscillator and derive the expression of frequency and gain.	CO1	10
	b.	Design a wide band reject filter having pass band gain = 6, $f_l = 200\text{ Hz}$, $f_h = 1\text{ KHz}$.	CO1	10
7.	a.	Explain the operation of PLL and list out some applications using PLL	CO1	8
	b.	Explain the working of free running multivibrator using 555 timer and derive the expression for frequency of oscillation	CO2	12
(OR)				
8.	a.	Design a analog to digital converter circuit with R-2R type for the binary input 100.	CO1	10
	b.	What are the types of Analog to digital converters and Explain the working of Successive Approximation type converter.	CO1	10
<u>Compulsory:</u>				
9.	a.	Describe in detail about the planar process used in the fabrication of IC.	CO3	20