B.E.(with Credits)-Regular-Semester 2012 - Instrumentation Engineering Sem IV IN404 - Linear Integrated Circuits

P. Pages: 2

Time : Three Hours

- Notes : 1. Same Answer book must be used for each question.
 - 2. All questions carry marks as indicated.
 - 3. Assume suitable data wherever necessary.
 - 4. Illustrate your answers wherever necessary with the help of neat sketches.
- 1. a) Draw the block schematic of an op-amp & briefly explain each block.
 - b) Following fig. 1.b shows a typical level shifting network. If input d.c. level is $6.84V \& R_2$ 8 is 270 Ω , design the value of R₁, if output voltage level required is zero volts.



- a) Which are the various practical characteristics of an op amp? What is the difference 8 between ideal & practical characteristics of op amp.
 - b) A non inverting amplifier with a gain of 150 is nulled at 25°c. What will be the change in the output voltage if temp. rises to 55°c for an input offset voltage drift of 0.15 mV/°c?
- **3.** a) Explain the working of op amp non inverting amplifier. Derive the expression for its **8** voltage gain.
 - b) Determine the output voltage for the configuration shown in fig. 3.b



OR

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Max. Marks : 80

- A 1 KHz square wave is applied to the integrator shown in Fig. 4.b. The amplifier uses b) 8 \pm 15V supply & the output saturator at \pm 14V. If the I/P alternator between \pm 5V.
 - Determine the maximum change in O/P voltage i)
 - ii) Determine the minimum slew rate required.





- Design a high pass filter with a cut off frequency of 10 KH_z with a pass band gain of 1.5. 5. 8 a) Also plot the frequency response for the designed filter.
 - With neat circuit diagram explain the phase shift oscillator. b)

OR

6.	a)	What is band pass filter? Which are the two types of band pass filter? Explain it.	8
	b)	Design a low pass filter at a cut off freq. of 1 KHz with pass band gain of 2. Also draw the designed filter circuit.	8
7.	a)	Discuss comparator applications: i) Zero crossing detector ii) Window detector	8
	b)	Design a Schmitt trigger whose V_{LT} & V_{UT} are $\pm 5V$ Draw its waveforms. Assume Vsat as $\pm 13.5V$	8
		OR	
8.	a)	Explain the operation of basic sample & hold circuit.	8
	b)	Explain the successive approximation A to D converter method.	8
9.	a)	Explain with neat circuit diagram, the IC 555 as monostable multivibrator.	8
	b)	List one application of PLL & then briefly describe the role of the PLL in that application.	8
		OR	
10.	a)	Explain in detail DAC 0808.	8
	b)	Write note on regulated power supply.	8

Write note on regulated power supply. b)

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