Code :RR311003

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III B.Tech I Semester(RR) Supplementary Examinations, May 2011
LINEAR & DIGITAL IC APPLICATIONS
(Electronics & Instrumentation Engineering, Biomedical Engineering, Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Define the terms : SVRR,CMRR, input bias current, input offset voltage,Gain Bandwidth product.
   (b) What are the differences between the inverting and non inverting terminals? What do you mean by the term ''virtual ground''?
2. (a) Design a unity gain summing amplifier to add three dc input voltages -0.5V, 0.1V and 0.75V in inverting configuration. If the saturation voltages of the OP-AMP are +18V, and -18V, find the possible maximum gain of the amplifier.
   (b) Design a subtractor circuit whose output is equal to the difference between the two inputs. Use a differential OP-AMP configuration.
3. (a) What feedback is preferred for oscillators and why? What is the effect of negative feedback?
   (b) Design an OP-AMP based relaxation oscillator and derive the frequency of oscillation.
4. (a) Draw the circuit of Schmitt trigger using 555 timer and explain its operation.
   (b) How is an Astable multivibrator using 555 timer connected in to a pulse position modulator?
5. Explain the operation of the following blocks of PLL in detail
   (a) Analog and Digital phase detectors
   (b) Voltage controlled oscillator
   (c) Low Pass-Filter.
6. (a) Explain the operation of a delay equalizer circuit with neat sketches. Derive an expression relating input and output voltages of the equalizer.
   (b) For the all pass filter, determine the phase shift between input and output at f=2 kHz. To obtain a positive phase shift. What modifications are necessary in the circuit?
7. (a) Compare different logic families and mention their advantages and disadvantages.
   (b) Which is the fastest non-saturated logic gate ? Draw the circuit and explain its functions.
8. (a) List out and compare different types of A/D converters.
   (b) Give the schematic circuit diagram of the fastest A/D converter and explain its operation.

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