Code No: RR210504 **RR**

II B.Tech I Semester(RR) Supplementary Examinations, May/June 2010
LINEAR AND DIGITAL IC APPLICATION
(Common to Computer Science & Engineering, Information Technology and Computer Science & Systems Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) List out the ideal characteristics of an OP-AMP. [3]
   (b) With neat block diagram explain the function of various building blocks of an OP-AMP. [10]
   (c) Draw the equivalent circuit of an OP-AMP. [3]
2. (a) Classify the types of OP-AMP based multipliers. How a multiplier can be used to [8]
      i. double the incoming frequency
      ii. detect the phase angle of a signal
   (b) Design a subtractor in non inverting configuration [8]
3. (a) What is a switching regulator? Draw the block diagram of a typical switching regulator and explain its operation. [8]
   (b) What are the four types of voltage regulators? Compare the performance of these regulators. [8]
4. (a) Explain the operation of Astable multivibrator using 555 timer. [10]
   (b) Design a square waveform generator of frequency 1kHz and duty cycle of 75% using 555 timer. [6]
5. Explain the terms Lock range, Capture range and Pull-in time a PLL. How are Lock ranges and Capture range determined? [16]
6. (a) Explain the term "Frequency Sealing" with suitable example. [6]
   (b) Design a wide band-pass filter with f_L=200Hz. F_H=1KHz and a pass-band gain=4. Draw the frequency response and calculate 'Q' factor for the filter. [10]
7. (a) Define the following terms : [4]
      i. Fan-in
      ii. Fan-out
      iii. Standard load
      iv. Noise-Margin.
   (b) Draw the circuit ECL OR/NOR gate and explain its operations with the help of Truth Table. [8]
   (c) What are the principal advantages of ECL logic (List out at least 5 advantages) [4]
8. (a) What are the basic blocks of analog multiplexer? Explain how the data selection process in performed in it. [8]
   (b) Draw a sample and hold circuit and explain its operation with necessary input and output waveforms and indicate its uses. [8]

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