

Code: R7311305

**R7**

B.Tech III Year I Semester (R07) Supplementary Examinations, May 2012

**LINEAR AND DIGITAL IC APPLICATIONS**

(Common to E.Con.E and ECC)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Explain briefly about non inverting Op-Amp with resistive feedback.  
(b) Explain the operation of symmetrical emitter coupled difference amplifier.
- 2 (a) Draw the circuit diagram of practical differential amplifier and explain its frequency response.  
(b) Design an op amp differentiator that will differentiate an input signal with  $f_{\max} = 100$  Hz (Assume  $C_1 = 0.1 \mu\text{f}$  and  $f_b = 10 f_a = 1$  KHz) Draw the output wave form for a sine wave input.
- 3 (a) Distinguish between narrow band and wide band pass filter and explain briefly about all pass filter.  
(b) What is an oscillator? Explain Wien bridge oscillator operation.
- 4 (a) What is a timer? Explain functional diagram of a astable multi vibrator using timer.  
(b) In a Astable multi using timer  $R_A = 6.8 \text{ K}\Omega$   $R_B = 3.3 \text{ K}\Omega$  and  $C = 0.1 \mu\text{f}$ . Calculate  
(i)  $t_{\text{High}}$  (ii)  $t_{\text{Low}}$  (iii) free running frequency (iv) duty cycle.
- 5 (a) What is the importance of DAC and explain basic circuit of flash type ADC.  
(b) Explain briefly about counter type A/D converter.
- 6 (a) Explain the characteristics of TTL families.  
(b) Explain briefly about TTL NAND gate.
- 7 (a) What are multiplexer and explain 8 input and 1 output multiplexer.  
(b) Explain briefly about comparator circuit and explain the operations of full adder circuit.
- 8 (a) What is shift register and explain bidirectional shift register.  
(b) Draw the timing diagram of 4 bit asynchronous counter and explain briefly.

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