B. Tech Degree V Semester Examination, November 2009

EC/EI 505 MICRO ELECTRONICS AND INTEGRATED CIRCUITS
(2006 Scheme)

Time : 3 Hours   Maximum Marks : 100

PART - A
(Answer *ALL* questions)

(8 x 5 = 40)

I.   (a)   Define the following terms :
             (i)   Slew rate
             (ii)   CMRR
      (b)   Explain the working of integrator using op – amps.
      (c)   Draw and explain the circuit of an astable multivibrator.
      (d)   Draw and explain the circuit of a peak detector.
      (e)   Draw the block diagram of PLL and explain each block.
      (f)   Explain the working of Flash – type ADC.
      (g)   What are the advantages of ICs over discrete components?
      (h)   Differentiate between hybrid and monolithic integrated circuits.

PART – B

(4 x 15 = 60)

II.   (a)   Draw the circuit of an op – amp inverting amplifier. Derive the expressions
             for voltage gain and input impedance.   (10)
      (b)   Explain virtual ground concept.   (5)
                                          OR
III.   Derive the expression for gain in an instrumentation amplifier.   (15)

IV.   Explain the working of RC phase - shift oscillator using op – amp. Derive the
             expression for frequency of oscillation and gain.   (15)
                                          OR
V.   (a)   Explain the working of Schmitt trigger and plot the transfer characteristics.   (8)
      (b)   Explain the working of all – pass filter.   (7)

VI.   Explain the functional block diagram of 555 timer. How it can be used as
             monostable multivibrator.   (15)
                                          OR
VII. (a)   Explain the working of low voltage regulator using 723 IC.   (10)
      (b)   Explain the application of PLL as a frequency multiplier.   (5)

VIII.   Explain bipolar IC fabrication steps with neat sketches.   (15)
                                          OR
IX.   Explain thick film technology. Explain how resistors and capacitors can be
             fabricated using thick film technology.   (15)

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