2006 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

II B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS,
LINEAR & DIGITAL IC APPLICATIONS
(COMMON TO ELECTRONICS & COMMUNICATION ENGINEERING, ELECTRONICS &
INSTRUMENTATION ENGINEERING, ELECTRONICS & CONTROL ENGINEERING,
MECHATRONICS AND ELECTRONICS & TELEMATICS)

NOVEMBER 2006

TIME -3 HOUR
MARK – 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is an OP-AMP? Why it is called so?   [4]

(b) Explain the parameters that should be considered for ac and dc applicationsof an OP-AMP
[6]

(c) Draw and explain the three open loop OP-AMP configurations with neat circuit diagram [6]

2. (a) Define slew rate and derive the expression for it. List causes of the slew rate and explain its significance in applications   [10]

(b) Explain the difference between slew rate and transient response   [6]

3. (a) Draw the schematic diagram of Wien Bridge Oscillator and derive the expression for frequency of oscillation   [10]

(b) What are the conditions to be satisfied by a circuit to produce oscillations?
[6]

4. (a) Design a 555 Astable multivibrator to operate at 10 KHz with 40% duty cycle.
[8]

(b) Explain in which the 555 timer can be used as Astable multivibrator   [8]

5. (a) Draw the circuit diagram IC 1496 balanced modulator circuit and explain its operations. Sketch the output waveform for the square wave inputs with a phase difference   . [8]

(b) Draw the circuit of PLL as frequency multiplier and explain its working   [8]

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) Draw the circuit of ECL logic OR/NOR gate and verify the Boolean expression.
[8]

(b) List out the major advantages of ECL logic.   [4]

(c) Explain the functions of a Tri-state TTL gate

8. (a) Draw the circuit of a Weighted Resistor DAC and obtain expression for n-bits.
[8]

(b) Sketch the Analog output voltage for the given digital input code. [4]

(c) What are the major disadvantages in this type?