

Code: EC4T6

II B.Tech - II Semester – Regular Examinations - JUNE 2015

**LINEAR IC APPLICATIONS
(ELECTRONICS AND COMMUNICATION ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

- 1 a) Explain DC coupling of cascaded differential amplifiers using relevant diagrams and necessary expressions. 7 M
- b) Describe the advantages of differential amplifiers and justify their applicability in op-amp with reference to stability and noise immunity. 7 M
- 2 a) Give the reasons why an open loop op-amp is not suitable for linear applications with necessary analysis. 7 M
- b) Define Slew rate and Derive an expression for the same. What factors effects slew rate? 7 M
- 3 a) Design a practical Integrator circuit to properly process input sinusoidal waveforms up to 1KHZ, the input amplitude is 10mV. 7 M
- b) What is the importance of instrumentation amplifier? Draw and derive the output expression for a OP-AMP Instrumentation amplifier with gain adjustability. 7 M

- 4 a) Explain the operation of a square wave generator by drawing the capacitor and output voltage waveforms. 7 M
- b) Draw the circuit of a log amplifier using op-amps and explain its operation. 7 M
- 5 a) Design a first order low pass filter for a high cut-off frequency of 2kHz and pass band gain of 2. 7 M
- b) What is a switched capacitor? Discuss any one of the type of switched capacitors. 7 M
- 6 a) Draw the circuit of a Monostable multi using IC555 and explain its operation with necessary analysis. 7 M
- b) Draw the Internal diagram of a voltage controlled oscillator and explain its working. 7 M
- 7 a) Design a PLL Circuit using IC 565 for a free running frequency of 20KHZ, Lock frequency of ± 1 KHZ and a Capture range of 200HZ. 7 M
- b) List out the applications of PLL. Explain the operation of AM detection and FM demodulation. 7 M
- 8 a) Draw the circuit of a R-2R ladder DAC and explain its working. 7 M
- b) Explain the following of 7 M
- i) Flash Type
 - ii) Successive Approximation ADC