

Code: 9A04502

**R9**

B.Tech III Year I Semester (R09) Supplementary Examinations, May 2013

**LINEAR IC APPLICATIONS**

(Electronics and Communication Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

\*\*\*\*\*

- 1 (a) Draw the circuit diagram of level translator. Explain the operation with suitable examples.  
(b) Explain how the voltage gain of a differential amplifier be increased without the increase of very high voltage collector resistors with necessary circuits.
- 2 (a) State the two types of integrated circuits classified according to their mode of operation and briefly explain the significance of each.  
(b) Derive the expression for CMRR for the first stage differential amplifier.
- 3 (a) What are the advantages of instrumentation amplifier? Derive an expression for the transfer function of an instrumentation amplifier.  
(b) For the non - inverting AC amplifier  $R_{in} = 50 \Omega$ ,  $C_i = 0.1\mu F$ ,  $R_1 = 1 K\Omega$ ,  $R_O = R_3 = 820 \Omega$ ,  $R_F = 5.6 K\Omega$  and  $R_1 = 10 K\Omega$ . Determine the gain and band width of the amplifier.
- 4 (a) Explain half wave rectifier using inverting and non-inverting configuration.  
(b) Explain the principle of operation of Saw-tooth waveform generator with suitable circuit.
- 5 (a) Explain the operation of first order high pass buffer worth filter.  
(b) Design a HPF at the cutoff frequency of 1 KHz and a pass band gain of 2.
- 6 (a) Explain the significance of each of comparators and operation of 555 timers.  
(b) Explain the application of 555 timers as linear ramp generator.
- 7 (a) Explain the operation of a counter type analog to digital converter.  
(b) Mention the drawbacks of counter type analog to digital converter and indicate the ways to overcome these drawbacks.
- 8 (a) What are the basic blocks of analog multiplexer? Explain how the data selection process in performed in it.  
(b) Draw a sample and hold circuit and explain its operation with necessary input and output waveforms and indicate its uses.

\*\*\*\*\*