Code No:**R1641022** **R16** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February- 2020

LINEAR IC APPLICATIONS

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1. a) What is meant by balanced output and unbalanced output? [2]
   b) List the ideal characteristics of an Op-amp. [2]
   c) Draw and explain the operation of current to voltage converter. [3]
   d) What is a Notch filter? [2]
   e) Define Lock in range and pull in time related to PLL. [2]
   f) The basic step of 9-bit DAC is 10.3 mV. If 000000000 represents 0V, what output is produced if the input is 101101111? [3]

PART–B *(4x14 = 56 Marks)*

2. a) Obtain the expression for the voltage gain, input resistance and output impedance of dual input unbalanced output differential amplifier. [7]
   b) Explain in detail about the level translator circuit. [7]

3. a) Define and explain the following:
      i) Input bias current
      ii) Input offset voltage [6]
   b) Explain about external frequency compensation techniques. [8]

4. a) Draw and explain the commonly used three Op-amp instrumentation amplifier circuit diagrams and also derive the expression for the gain. [7]
   b) With the help of neat diagram explain the operation of monostable multivibrator using Op-amp and also obtain the expression for pulse width. [7]

5. a) Design a second order Butterworth high pass filter having lower cut-off frequency 1KHz. [7]
   b) Draw and explain the operation of Sample & Hold circuit with the help of neat sketches. [7]

6. a) Draw the circuit diagram of an Astable multivibrator to generate the output signal with frequency of 1KHz and the duty cycle of 75%. [7]
   b) How PLL used as FM demodulator? Explain its operation with neat diagram. [7]

7. a) Why is an inverted R-2R ladder DAC is better than the R-2R ladder DAC? [4]
   b) Explain the operation of Dual slope ADC. [7]
   c) Which is the fastest ADC and why? [3]

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