Code No: RT31042 **R13** SET - 1

III B. Tech I Semester Supplementary Examinations, October/November - 2019

LINEAR IC APPLICATIONS

(**Common to** Electronics and Communication Engineering,
Electronics and Instrumentation Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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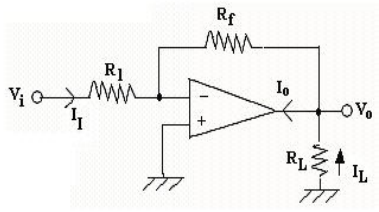
PART –A (22 Marks)

1. a) What is the significance of DC Coupling? [4M]
   b) Define Slew Rate and give its ideal and practical values. [4M]
   c) What are the applications of Comparators? [3M]
   d) What is the relationship between order of a filter and roll off rate? [4M]
   e) List the applications of VCO (566). [4M]
   f) What are advantages and disadvantages of dual slope ADC? [3M]

PART –B (48 Marks)

2. a) Explain the fundamentals of Differential amplifier. [8M]
   b) Draw the circuit diagram of differential amplifier with Single input and unbalanced output. Derive expressions for differential gain A_d, input resistance R_i, and output resistance R_o. [8M]

3. a) Explain the concept of Virtual Ground in detail. [8M]
   b) For the circuit shown below; calculate I_1, I_L and V_0 with R_1=9 kΩ, R_f=50kΩ, V_i=0.5V, R_L= 20KΩ. [8M]



4. a) Find $R_1$and R_f in the lossy integrator so that the peak gain is 20dB and gain is 3dB down from its peak when ω=10,000 rad/sec. use a capacitance of 0.01μF. [8M]
   b) With a neat sketch explain the operation of Triangular generator. [8M]

5. a) Design a low pass filter with a cut off frequency of 1 kHz and with a pass band gain of 2. [8M]
   b) With a neat sketch explain the operation of Four Quadrant Multiplier. [8M]

6. a) Design a monostable multivibrator using 555 timer to produce a pulse width of 100 m sec. [8M]
   b) Derive the expressions for i) Lock in range. ii) Capture range. [8M]

7. a) Draw a weighted resistor DAC and obtain the transfer characteristics of a 3 bit DAC. [8M]
   b) Draw and explain the circuit operation of Successive approximation ADC. [8M]

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