III B. Tech I Semester Supplementary Examinations, May-2017
LINEAR IC APPLICATIONS
(Common to Electronics and Communication Engineering, Electronics and Instrumentation Engineering and Electronics and Computer Engineering)

Time: 3 hours   Max. Marks: 70

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

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PART –A

1   a)   Draw and explain the circuit diagram of basic current mirror.   [4M]
    b)   The input signal to an op-amp is 0.03 sin $(1.5 \times 10^5 t)$. What can be the maximum gain of an op-amp with the slew rate of 0.4V/µs?   [4M]
    c)   Explain how the average circuit can be derived from the summer.   [3M]
    d)   What are the characteristics of all pass filters?   [3M]
    e)   Describe the PPM using 555 timer mono stable multi vibrator.   [4M]
    f)   The LSB of a 10=bit DAC is 20mv.calculate the output voltage for an input, 1011001101.   [4M]

PART –B

2   For a Dual input balanced output differential amplifier R_C=47kΩ, RS_1=RS_2=20kΩ, R_1=43kΩ, h_{fe}=75, h_{ie}=20k, V_{cc}=9v, V_{EE}=-9v and V_{BE}=0.7v calculate **i**) operating point values **ii**)A_d **iii**)A_c iv)CMRR in dB   [16M]

3   a)   Discuss briefly about stability of an op-amp.   [8M]
    b)   Explain about the concept of frequency compensation.   [8M]

4   a)   Derive the frequency response of a practical integrator.   [8M]
    b)   Design a practical integrator circuit with a D.C gain of 20, to integrate a square wave of 25kHz.   [8M]

5   a)   Explain the operation of Narrow band pass filter with a neat diagram.   [6M]
    b)   Design a multiple feedback Narrow band pass filter with f_c=1kHz, Q=3 & A_f=10.   [10M]

6   Describe the 555 timer monostable multivibrator applications in **i**) Frequency divider **ii**) Pulse width modulation.   [16M]

7   a)   With neat sketch explain the principle and operation of successive approximation ADC.   [8M]
    b)   With neat sketch explain the operation of Dual slope ADC.   [8M]

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