

III B. Tech I Semester Supplementary Examinations, May - 2016**LINEAR IC APPLICATIONS**

(Common to ECE, EIE and ECompE)

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 compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) Define slew rate. What causes it? [4M]
 b) Compare the frequency response of compensated and uncompensated op-amp. [4M]
 c) Give some limitations of op-amp as a comparator. [4M]
 d) Why do we use higher order filters? Give the relationship between order of a filter and roll off rate. [4M]
 e) Define capture range and lock in range of a PLL. [3M]
 f) What is an all-pass filter? Mention some of its applications. [3M]

PART -B

- 2 a) Perform AC and DC analysis of an emitter coupled pair. [8M]
 b) Draw the circuit of any one type of differential amplifier and explain the operation. [8M]
- 3 a) Draw and explain the three open loop op-amp configurations with neat circuit diagram. [8M]
 b) Explain the frequency compensation techniques of an Op-Amp. [8M]
- 4 a) What are the two closed loop configurations of an Op-Amp, obtain the gains in both the cases. [8M]
 b) Draw the frequency response curve of a differentiator. How is it modified when a small resistor is connected in series with the capacitor? [8M]
- 5 a) Design a first order wide band reject filter with a higher cutoff frequency of 100Hz and a lower cutoff frequency of 1kHz. Calculate the Q of the filter. [8M]
 b) Explain how a four quadrant multiplier be obtained from single quadrant multiplier. [8M]
- 6 a) Explain the block diagram of PLL emphasizing the capture range and lock range. [8M]
 b) Design monostable multivibrator using 555 timer to produce a pulse width of 100 m sec. [8M]
- 7 a) Describe the operation of dual slope A/D converter with necessary diagrams. Give some of its advantages & disadvantages. [8M]
 b) How many resistors are required for an 8-bit weighted resistors D/A converter? What are those resistor values, assuming the smallest resistance is R? [8M]

