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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech III Year I Semester Supplementary Examinations December-2021**

**LINEAR IC APPLICATIONS**

(Common to ECE & EEE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Draw the circuit of basic current mirror and explain its operation. L2 6M  
 b What is level translator? Explain the necessity of level translator stage in cascading differential amplifier. L1 6M

**OR**

- 2 a Explain DC analysis of dual input balanced output differential amplifier. L2 6M  
 b Why is  $R_e$  in an emitter coupled differential amplifier replaced by a constant current source with circuit Diagram? L1 6M

**UNIT-II**

- 3 Explain in detail about external frequency compensation techniques with neat sketches. L2 12M

**OR**

- 4 a Explain about the dominant pole frequency compensation network. L2 6M  
 b Write the difference between compensating and un compensating networks. L2 6M

**UNIT-III**

- 5 a Draw a neat circuit of an integrator circuit. Explain the functioning with the input-output Waveforms. L2 6M  
 b Derive the output voltage  $V_O$  of practical integrator circuit. L1 6M

**OR**

- 6 a Derive the output voltage  $V_O$  of practical differentiator circuit. L1 6M  
 b Design a differentiator to differentiate an input signal that varies in frequency from 10 Hz to about 1 kHz? L2 6M

**UNIT-IV**

- 7 a Explain in which the 555 timer can be used as monostable multivibrator. L1 6M  
 b Explain in which the 555 timer can be used as Astable multivibrator. L2 6M

**OR**

- 8 a Explain the comparator and zero crossing detector? L2 6M  
 b Explain the operation of Schmitt trigger. Discuss its characteristics and limitations? L1 6M

**UNIT-V**

- 9 a Explain about the sample and hold circuits? L2 6M  
 b Explain about flash type ADC? L2 6M

**OR**

- 10 Draw the circuit diagram of single Slope ADC and explain its working with neat Sketches. L2 12M

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