

Roll No.

3222

**B. Tech. (ECE)-(Elective-I) 5th Semester
Examination – February, 2022**

LINEAR APPLICATIONS

Paper: PEG-ECE-313-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 is compulsory. Attempt any one question each from Unit-I to Unit-IV.

1. (a) What are current mirrors ?
- (b) What is a compensating network ?
- (c) Explain voltage to current converter.
- (d) What is instrumentation amplifier ? Give circuit diagram.

(e) What are the causes of slow rate ?

(f) What is input offset voltage and CMRR ?

2.5 × 6 = 15

UNIT - I

2. Explain working of differential amplifier. Derive equation for DC analysis and AC analysis for dual input, balanced output differential amplifier. 15

3. (a) Explain the concept of level translator. 5

(b) Give characteristics of ideal Op-Amp. 5

(c) Explain block diagram of Op-Amp. 5

UNIT - II

4. Explain voltage series feedback amplifier. Derive equation for closed loop voltage gain, input resistance and output resistance. 15

5. Explain high frequency Op-Amp equivalent circuit. What are the sources of capacitive effects ? Derive equation for voltage gain as a function of frequency. 15

3222- (P-3)(Q-9)(22) (2)

UNIT - III

6. (a) Explain frequency response of basic and practical differentiator. 10

(b) Write note on peaking and summing amplifier. 5

7. What are active filters ? Derive equation of voltage gain for first order low pass Butterworth filter. Write filter design steps. 15

UNIT - IV

8. Explain pin diagram and internal structure working of 555 timer. 15

9. (a) Explain monostable operation of 555 timer. 10

(b) Explain operating principle of PLL. 5

3222- (P-3)(Q-9)(22) (3)