

Roll No. ....

**3222**

**B. Tech. 5th Semester (ECE) (Elective-I)  
Examination – March, 2021**

**LINEAR APPLICATIONS**

Paper : PEC-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 :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

**1.** Answer the following in brief :  $2.5 \times 6 = 15$

- (a) What is level translator ?
- (b) Give ideal characteristics of Op-Amp.
- (c) What is peaking Op-Amp ? equivalent circuit.
- (d) Explain summing and scaling Op-Amp. equivalent circuit.
- (e) Explain high frequency Op-Amp. equivalent circuit.
- (f) Explain basic differentiator.

### UNIT - I

2. Explain working of differential amplifier. Derive equation for DC analysis, AC analysis for single input balanced output differential amplifier. 15
3. (a) Explain the concept of current mirror. 5  
(b) Explain practical characteristics of Op-Amp. 10

### UNIT - II

4. Explain voltage shunt feedback amplifier. Derive equation for closed loop voltage gain, input resistance and output resistance. 15
5. (a) Write note on features of compensating networks. 5  
(b) What is slew rate? What are its causes? Derive slew rate equation. 10

### UNIT - III

6. (a) Explain instrumentation amplifier. 10  
(b) Write note on differential input and output amplifier. 5

7. (a) Explain frequency response of basic and practical integrator. 10  
(b) Explain voltage to current converter. 5

### UNIT - IV

8. Explain pin diagram and internal structure working of 555 timer. 15
9. (a) Explain astable operation of 555 timer. 10  
(b) Explain block diagram of PLL. 5