

# OLE-3222

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

### LINEAR APPLICATIONS

Paper : PEC-ECE-313-G

*Time : Three Hours ]*

*[ Maximum Marks : 75*

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*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.*

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*Note : Question No. 1 is compulsory. Attempt one question from each Unit. All questions carry equal marks.*

1. (a) What is an ideal OP-AMP ?  $2.5 \times 6 = 15$
- (b) What is voltage shunt feedback ?
- (c) Construct Differential Amplifier with one op-amp.
- (d) Find the output voltage of scaling amplifier.

- (e) Write a short note on Universal Active filter.
- (f) Explain the block diagram of an instrumentation system.

### UNIT – I

- 2. (a) Discuss the cascade configuration of amplifiers. 8
- (b) Explain the working and construction of FET Differential Amplifier. 7
- 3. (a) Draw the equivalent circuit of an OP-AMP. Also draw the ideal voltage transfer curve. 8
- (b) Draw the diagram of Inverting Amplifier. Also determine the output voltage of the inverting amplifier if  $v_{in} = 20 \text{ mV dc}$ . 7

### UNIT – II

- 4. (a) Discuss the voltage series feedback amplifier with feedback. Also find out the closed loop voltage gain equation. 8

(b) Explain in detail voltage shunt feedback differential amplifier. Find out the input resistance with feedback. 7

5. (a) Find out the frequency response of internally compensative op-amp and non compensating op-amp. 8

(b) Derive the expression for open loop voltage gain as a function of frequency. 7

### UNIT – III

6. (a) Explain summing amplifier with differential configuration. 8

(b) Explain Instrumentation Amplifier with transducer bridge. 7

7. (a) Describe differential input and differential output amplifier using a dual op-amp. 8

(b) Explain in detail phase shift oscillator. 7

## UNIT – IV

8. Explain in detail monostable and astable operation of 555 timer IC. Also explain its applications. 15
9. Write short note on : 15
- (i) Universal active filter
  - (ii) PLL
  - (iii) 8038 IC
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