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Roll No. :

328551(28)

B. E. (Fifth Semester) Examination, Nov.-Dec. 2021

(New Scheme)

(Et&T Engg. Branch)

**LINEAR INTEGRATED CIRCUITS
& APPLICATIONS**

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. In each unit part (a) is compulsory. Attempt any two parts from (b), (c) and (d).

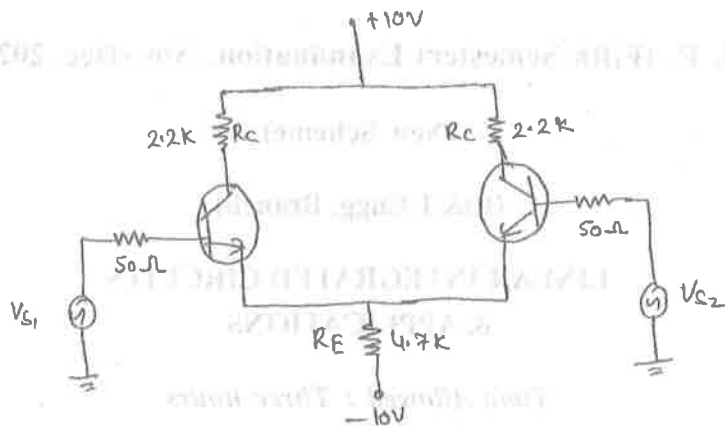
Unit-I

1. (a) What is virtual ground?

2

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- (b) Discuss the Ideal characteristics of OPAMP. 7
- (c) Draw the block schematic of an OPAMP. Briefly explain each block. 7
- (d) Fig. shows the dual input differential amplifier. 7



- (i) Determine Q point values
- (ii) Determine voltage gain
- (iii) Determine input and output resistance
- (iv) Determine output voltage if $V_{S1} = 50 \text{ mV}(P-P)$ and $V_{S2} = 20 \text{ mV}(P-P)$.
Assume $h_{fe} = 100, V_{BE} = 0.72, h_{ie} = 2.5 \text{ K}$. 7

Unit-II

2. (a) What is a voltage follower circuit? 2

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- (b) With help of neat diagram and waveform explain full wave precision rectifier circuit. 7
- (c) Describe log amplifier using Diode and Transistor in detail. 7
- (d) Draw and explain Schmitt trigger circuit with output waveform. 7

Unit-III

3. (a) What is the difference between A/D and D/A Converter? 2
- (b) Explain the R to 2 R ladder type Digital to analog conversion. 7
- (c) Explain the successive approximation A/D Converter with block diagram. 7
- (d) What are the important specification of D/A Converter? 7

Unit-IV

4. (a) How IC 78 XX different from IC 79 XX. 2
- (b) Draw and explain fold back current limiting circuit. 7

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- (c) Explain series and shunt regulator with block diagram. 7
- (d) Explain the important feature and internal structure of General Purpose IC regulator IC 723. 7

Unit-V

- 5. (a) Define PLL and application of PLL. 2
- (b) Define Lock in range and capture range. Derive an expression for lock in range. 7
- (c) Explain exponential multiplier circuit and express mathematical equation to get output of two input signal using RC 4200. 7
- (d) What is analog multiplier and explain it's applications? 7