

9. Answer the following :

- (a) List out the ideal and practical characteristics of Op-Amp.
- (b) Difference between Clipper and Clamper.
- (c) Explain voltage-series feedback amplifier.
- (d) Application of Notch Filter.
- (e) Discuss the Barkhausen criterion as applied to electronic feedback oscillators. **5×3=15**

Roll No.

Total Pages : 04

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B. Tech. EXAMINATION, March 2021

Semester IV (CBCS)

LINEAR INTEGRATED CIRCUITS

EC-403

Time : 2 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from each Sections A, B, C and D. All questions carry equal marks.

Section A

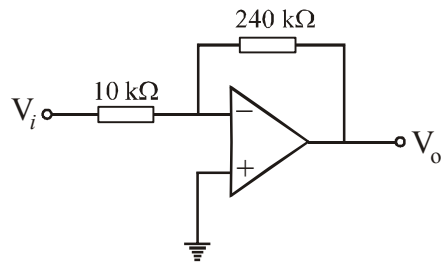
1. (a) For the inverting amplifier given that $R_1 = 1 \text{ k}\Omega$ and $R_f = 10 \text{ k}\Omega$. Assuming an ideal amplifier, calculate the output voltage for the input of 1V.

7.5

(b) Draw the block diagram of operational amplifier and explain it in detail. 7.5

2. (a) Draw the circuit symbol of op-amp. Explain, what is meant by inverting input ? 7.5

(b) For given op-amp circuit determine maximum frequency of operation that can be used by taking $SR = 0.5 \text{ v}/\mu\text{s}$ and the input voltage $(v_i) = 0.02 \text{ v}$. 7.5



Section B

3. Draw the equivalent circuit of op-amp and derive V_o expression by taking the reference of virtual ground for logarithmic, antilogarithmic, Differentiator, Integrator. 7.5

4. Describe the classification of active filters. Explain the working of band pass filter. 7.5

Section C

5. (a) Differentiate between astable and monostable multivibrator. 7.5

(b) Explain the working of astable multivibrator designed by op-amp. 7.5

6. Discuss the following w.r.t. Op-Amp Context :

(a) Peak Detector 4

(b) Clipper 4

(c) Sample and hold circuit 4

(d) V to I and I to IV converters. 3

Section D

7. Define lock-in-range, capture-range and pull-in-time as related to PLL. Draw the circuit diagram of frequency translation circuit using PLL and explain its working. 15

8. Explain fixed and adjustable voltage regulator. 15