

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (ECE) (Sem.-5)**  
**LINEAR INTEGRATED CIRCUITS**

Subject Code : BTEC-503-18

M.Code : 78299

Date of Examination : 23-11-2023

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) Discuss the differences between a Butterworth and a Chebyshev filter.
- b) State the Barkhausen criterion for oscillation.
- c) Draw a circuit to find  $V_0 = (V_1 + V_2) - (V_3 + V_4)$ .
- d) List the applications of 555 timer in monostable mode of operation.
- e) What is the working principle of switching regulator?
- f) Draw the circuit diagram of Schmitt trigger. What are its applications?
- g) What are the four differential amplifier configurations? Which one is commonly used and why?
- h) What is the effect of negative feedback in a non-inverting amplifier on input impedance and bandwidth?
- i) Define Supply Voltage Rejection Ratio (SVRR).
- j) What is frequency response of Op-amp?

## SECTION-B

2. The input to an op-amp differentiator circuit is a sinusoidal voltage of peak value  $20\mu V$  and frequency of 2 kHz. If the values of differentiating components are given as  $R = 40\text{ K}\Omega$  and  $C = 5\mu F$ . determine the output voltage.
3. Define the CMRR of an op-amp and explain the significance of relatively large value of CMRR.
4. Discuss the application of op-amp as an inverting and non-inverting adder.
5. Design a low pass filter at a cutoff frequency of 1 kHz with a passband gain of 2. Plot the frequency response of this filter.
6. What are three differential amplifier configurations? Briefly compare and contrast them.

## SECTION-C

7. Draw the standard block diagram representation of a feedback amplifier and show how the inverting amplifier fits the model. Calculate the actual values of the low frequency closed loop gain, the input resistance and the output resistance for an inverting op-amp circuit.
8. Discuss with circuit diagram, working of phase shift and wein bridge oscillators.
9. Explain the operating principle of PLL with the help of a block diagram. Discuss its two applications. Assume the missing data, if any.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**