

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 : 18-06-2024

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) Draw the circuit diagram of an op-amp with differentiator.
- b) What is an Opto-coupler?
- c) What is an Antilog Amplifier?
- d) The output voltage of an op-amp changes by 25 V in 5 μ Calculate its slew rate.
- e) A differential amplifier has a differential voltage gain of 2000 and common mode gain of 0.2. Determine CMRR in dB.
- f) Why integrators are preferred over differentiators?
- g) What is a Summing Amplifier? Draw its circuit diagram.
- h) Define the lock-in range and capture range of a PLL.
- i) Define the first order low pass filter. What does the order of a filter signify?
- j) What is need for frequency compensation in practical op-amps?

SECTION-B

2. Draw the pin diagram of IC-741 and discuss the function of each pin.
3. Derive the differential input resistance of a simple differential amplifier. Show that the voltage gain equation for the differential amplifier is independent of emitter resistance.
4. Draw the circuit diagram of Logarithmic Amplifier using diodes and obtain an expression for the output voltage.
5. Design a high pass filter with a cut off frequency of 10KHz with a passband gain of 1.5. Also calculate the frequency response for the designed filter.
6. How does negative feedback affect the performance of an inverting amplifier?

SECTION-C

7. Discuss the working of Phase Shift Oscillator along-with its applications and limitations.
8. a) Discuss about the working of Schmitt trigger.
b) Discuss briefly on the differential mode Instrumentation amplifier.
9. Design a square wave generator using 555 timer for a frequency of 120Hz and 60% duty cycle. Assume $C=0.2\mu\text{F}$.

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.