

Reg. No.

Question Paper Code

13650

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fourth Semester

Electronics and Communication Engineering

20ECPW402 - LINEAR INTEGRATED CIRCUITS WITH LABORATORY

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

	Marks	K – Level	CO
1. A closed-loop configuration in an op-amp involves: (a) Feedback (b) No feedback (c) High output impedance (d) Infinite input impedance	1	K1	CO1
2. The gain-bandwidth product for a typical IC 741 op-amp is approximately: (a) 1kHz (b) 1MHz (c) 10MHz (d) 100 MHz	1	K1	CO1
3. An adder circuit is also known as a: (a) Summing amplifier (b) Voltage follower (c) Phase shifter (d) Differentiator	1	K1	CO2
4. A precision rectifier is also called a: (a) Half-wave rectifier (b) Peak detector (c) Super diode (d) Logarithmic amplifier	1	K1	CO2
5. The Monolithic PLL IC 565 has a typical lock range of: (a) 1Hz (b) 100Hz (c) 10kHz to 500kHz (d) 1MHz	1	K1	CO3
6. Which component in a PLL ensures that the loop remains locked? (a) Phase detector (b) VCO (c) Loop filter (d) Feedback amplifier	1	K1	CO3
7. A flash-type ADC is also known as: (a) Serial ADC (b) Successive approximation ADC (c) Parallel ADC (d) Dual-slope ADC	1	K1	CO4
8. Which type of DAC uses a binary-weighted resistor network? (a) Weighted Resistor DAC (b) R-2R Ladder DAC (c) Flash DAC (d) Current-mode DAC	1	K1	CO4
9. The output voltage of a 7805 voltage regulator is: (a) 5 mV (b) 5 V (c) 50 V (d) Variable	1	K1	CO5
10. The IC 555 timer can generate duty cycles between: (a) 50% and 100% (b) 10% and 50% (c) 0% and 100% (d) 0% and 50%	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11. List the ideal characteristics of an operational amplifier.	2	K1	CO1
12. Define Slew Rate and what causes the slew rate.	2	K1	CO1
13. Justify that the gain of voltage follower is unity.	2	K2	CO2
14. Mention some of the non-linear applications of op – amps.	2	K1	CO2
15. List the applications of PLL.	2	K1	CO3
16. Discuss Variable transconductance technique.	2	K2	CO3
17. How would you justify, which type of ADC is the fastest?	2	K1	CO4
18. List the main advantages of integrating type ADCs.	2	K1	CO4
19. Define Line regulation.	2	K1	CO5
20. State the uses of switched capacitor filters.	2	K1	CO5
21. Compare Linear regulator and Switched mode regulator.	2	K2	CO6
22. List the various applications of multivibrator.	2	K1	CO6

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) Explain the AC Characteristics of op amp. 11 K2 CO1
- OR**
- b) Write a note on stability criteria and frequency compensation technique applied in Op-amp. 11 K2 CO1
24. a) With neat sketch explain the operation of an instrumentation amplifier. 11 K2 CO2
- OR**
- b) With neat diagram explain logarithmic amplifier and antilogarithmic amplifier. 11 K2 CO2
25. a) Derive the expression for Lock in Range and Capture Range with necessary block configurations. 11 K2 CO3
- OR**
- b) How would you describe the block diagram of PLL and Discuss any three applications of PLL in detail. 11 K2 CO3
26. a) Explain the working of R-2R ladder type DAC. 11 K2 CO4
- OR**
- b) Explain the working of dual slope A/D converter with neat sketch. 11 K2 CO4
27. a) Differentiate between the low pass, high pass and band pass filter. Sketch the frequency plot. 11 K2 CO5
- OR**
- b) Explain about the sawtooth wave generator using IC741 with a neat sketch. 11 K2 CO5
28. a) Explain the operation of astable multivibrator using IC741 with necessary diagrams. 11 K2 CO6
- OR**
- b) Explain a wein bridge oscillator using RC network and bridge network with frequency of oscillation. 11 K2 CO6