

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 54051

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electronics and Instrumentation Engineering

15UEI401 - LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- SiO₂ layer reacts only with the chemical reagent namely
 - Hydrochloric Acid
 - Sulphuric Acid
 - Hydrofluoric Acid
 - Acetic Acid
- For an ideal op-amp, the CMRR will be
 - 1
 - 0
 - Infinity
 - Negative
- For an op-amp having a slew rate SR = 5 V/ms, what is the maximum closed-loop voltage gain that can be used when the input signal varies by 0.2 V in 10 ms.
 - 150
 - 200
 - 250
 - 300
- The purpose of level shifter in Op-amp internal circuit is to
 - Adjust DC Voltage
 - Increase Impedance
 - Provide high gain
 - Decrease input resistance
- The closed loop comparator is otherwise called as
 - Monostable Multivibrator
 - Astable Multivibrator
 - Bistable Multivibrator
 - Schmitt Trigger
- A binary-weighted digital-to-analog converter has an input resistor of 100KΩ. If the resistor is connected to a 5 V source, the current through the resistor is: Non-monotonic error
 - 50 μA
 - 500 μA
 - 5 mA
 - 50 mA

7. The _____ is defined as the time the output is active divided by the total period of the output signal
- (a) On time (b) Off time (c) Duty Cycle (d) Active ratio
8. An oscillator whose frequency can be controlled by an input "control voltage" is called a(n)
- (a) PLL (b) Analog Multiplier
(c) VCO (d) Timer
9. Switching voltage regulators have _____ than linear regulators?
- (a) Longer life (b) Simpler Circuitry
(c) Greater Efficiency (d) Lower Cost
10. Which one can be used for the purpose of isolation?
- (a) Voltage regulator (b) Multivibrator
(c) Optocoupler (d) Power amplifier

PART - B (5 x 2 = 10 Marks)

11. Define the term Bird's peak in IC fabrication.
12. Define slew rate and what is the cause for it?
13. Specify the significance of sample and hold circuit in signal conversion process?
14. Modify the analog multiplier circuit to work as square root circuit?
15. Give the two specifications of Isolation amplifiers.

PART - C (5 x 16 = 80 Marks)

16. (a) Summarize the steps involved in the fabrication of monolithic devices in a single substrate. (16)



Or

- (b) Apply basic fabrication steps to design monolithic resistor. (16)

17. (a) Evaluate the expression for slew rate and examine the effects and methods for improving the slew rate. (16)

Or

(b) Define input offset current and the methods to reject the effects of offset current in Op-Amp. (16)

18. (a) Derive the expression for the output voltage of a three stage instrumentation amplifier and discuss its applications. (16)

Or

(b) Explain the working of Monostable Multivibrator using Op-Amp and derive its equation for time period. (16)

19. (a) Assess the functioning of A-stable Multivibrator using IC555 timer and derive its expression for output frequency. (16)

Or

(b) Discuss the block diagram of PLL and summarize its region of operation. (16)

20. (a) Interpret the working of LM723 voltage regulator and modify the circuitry to function as low and high voltage regulator. (16)

Or

(b) Describe the operating of isolation amplifier with linearized feedback. (16)
