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**Question Paper Code: 54501**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Fourth Semester

Electronics and Instrumentation Engineering

15UEI401 - LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

- In IC fabrication, oxidation is used for  
(a) Isolation      (b) Surface passivation      (c) Packaging      (d) Doping
- For an ideal op-amp, the CMRR will be  
(a) 1      (b) 0      (c) Infinity      (d) Negative
- Output impedance recommended for an op-amp is  
(a) Unity      (b) Zero      (c) Infinity      (d) any value
- Which factor makes the differentiator circuit unstable  
(a) Output impedance      (b) Input voltage  
(c) Noise      (d) Gain
- The closed loop comparator is otherwise called as  
(a) Monostable Multivibrator      (b) Astable Multivibrator  
(c) Bistable Multivibrator      (d) Schmitt Trigger
- A binary-weighted digital-to-analog converter has an input resistor of  $100\text{K}\Omega$ . If the resistor is connected to a 5 V source, the current through the resistor is: Non-monotonic error  
(a)  $50\ \mu\text{A}$       (b)  $500\ \mu\text{A}$       (c) 5 mA      (d) 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. What is the expression for time period of a mono-stable 555 multi-vibrator
- (a)  $T = 0.33RC$                       (b)  $T = 1.1RC$                       (c)  $T = 3RC$                       (d)  $T = RC$
9. Switching voltage regulators have \_\_\_\_\_ than linear regulators?
- (a) Longer life                      (b) Simpler Circuitry  
(c) Greater Efficiency                      (d) Lower Cost
10. Which type of IC voltage regulator exhibits continuous variation in the impedance of transistor in order to supply the desired load current?
- (a) Linear regulators                      (b) Switching regulators  
(c) Both (a) and (b)                      (d) None of these

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Summarize the steps involved in the fabrication of monolithic devices in a single substrate. (8)



12. Describe in detail about AC characteristics of Op-amp with relevant circuit diagram. (8)
13. Derive the expression for the output voltage of a three stage instrumentation amplifier and discuss its applications. (8)
14. Explain the operation of IC565 phase locked loop with neat circuit diagram and derive its necessary equations. (8)
15. Interpret the working of LM723 voltage regulator and modify the circuitry to function as low and high voltage regulator. (8)