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Question Paper Code: 54501

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

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)

1. In IC fabrication, oxidation is used for

    (a) Isolation   (b) Surface passivation   (c) Packaging   (d) Doping

2. For an ideal op-amp, the CMRR will be

    (a) 1   (b) 0   (c) Infinity   (d) Negative

3. Output impedance recommended for an op-amp is

    (a) Unity   (b) Zero   (c) Infinity   (d) any value

4. Which factor makes the differentiator circuit unstable

    (a) Output impedance   (b) Input voltage
    (c) Noise   (d) Gain

5. How the op-amp comparator should be chosen to get higher speed of operation?

    (a) Large gain   (b) High slew rate   (c) Less gain   (d) Wider bandwidth

6. A digital-to-analog converter is an application of the

    (a) Scaling adder   (b) Voltage-to-current converter
    (c) Non inverting amplifier   (d) Adjustable bandwidth circuit

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. At what range the PLL can maintain the lock in the circuit?

    (a) Lock in range   (b) Input range   (c) Feedback loop range   (d) output range

9. 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) Series regulators   (d) Shunt regulators

10. FSK stands for

    (a) Frequency Shift Keying   (b) Fast Shift Keying
    (c) Frequency Standard Keying   (d) Function shift Keying

PART - B (5 x 2 = 10 Marks)

11. Mention the advantages of integrated circuits.

12. Define slew rate.

13. What is frequency scaling?

14. State Pull-in time.

15. List the non- linear applications of op-amps.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about any 4 basic processes used to fabricate ICs using silicon planar technology. (16)

Or

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

17. (a) Describe in detail about DC characteristics of Op-amp with relevant circuit diagram. (16)

Or

    (b) Explain integrater and differentiater in detail with waveforms. (16)

18. (a) (i) Write a note on V/ I and I/V converter. (8)

        (ii) Explain the operation of Schmitt trigger. (8)

Or

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(b) (i) Draw the circuit of a weighted resistor DAC and explain its working principle.

(6)

(ii) Brief about the principle of operation of successive approximation type ADC with neat block diagram. (10)

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

Or

(b) Explain the operation of IC565 phase locked loop with neat circuit diagram and derive its necessary equations. (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) Write an explanatory note on (i) Opto coupler (ii) Isolation amplifiers . (16)

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