C

Question Paper Code: 94404

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Electronics and Communication Engineering

19UEC404– Linear Integrated Circuits

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The output of a particular Op-amp increases 8V in 12µs. The slew rate   CO2-App
   is …….

   (a) 90 v/µs   (b) 0.67 v/µs   (c) 1.5 v/µs   (d) 2.5 v/µs

2. Which of the following functions does the antilog computation   CO1-U
   required to perform continuously with log-amps?

   (a) In(x)   (b) log(x)   (c) Sinh(x)   (d) All of the mentioned

3. In a D-A converter with binary weighted resistor, a desired step size   CO1-U
   can be obtained by

   (a) Selecting proper value of V_{FS} (b) Selecting proper value of R

   (c) Selecting proper value of R_F (d) All of the mentioned

4. How many control lines are present in analog to digital converter in   CO1- U
   addition to reference voltage?

   (a) Three   (b) Two   (c) One   (d) None of the mentioned

5. A monostable multivibrator has R = 120kΩ and the time delay T =   CO2- App
   1000ms, calculate the value of C?

   (a) 0.9µF   (b) 1.32µF   (c) 7.5µF   (d) 2.49µF

PART – B (5 x 3= 15 Marks)

6. A differential amplifier has a differential voltage gain of 2000 and common   CO2- App
   mode gain of 0.2. Determine CMRR in dB.

7. Differentiate Logarithmic and antilogarithmic amplifiers.   CO1- U

8. Define resolution of a data converter.   CO1- U

9. Differentiate Schmitt trigger and Comparator.   CO1-U

10. The basic step of a 9 bit DAC is 10.3 mV. If 000000000 represents 0 Volts,   CO2-App
    what is the output for an input of 101101111.

PART – C (5 x 16= 80 Marks)

11. (a) Explain the AC characteristics of operational amplifier.   CO1- U   (16)

                              Or

    (b) Explain the DC characteristics of operational amplifier.   CO1- U   (16)

12. (a) Explain the working of an instrumentation amplifier with a neat   CO1- U   (16)
        diagram.

                              Or

    (b) Explain in detail about Integrator and Differentiator with an OP- CO1- U   (16)
        AMP

13. (a) Discuss in detail about the successive approximation ADC with   CO1- U   (16)
        neat diagram.

                              Or

    (b) Discuss in detail about the R-2R ladder type DAC with neat   CO1- U   (16)
        diagram.

14. (a) Design a 8 to 3 bit output Flash type ADC with neat diagram.   CO3- Ana   (16)

                              Or

    (b) Design a 6 bit the successive approximation ADC with neat   CO3- Ana   (16)
        diagram.

15. (a) Determine the output voltage for the circuit of Figure given   CO3-App   (16)
        below, if Vin = 1 V, Ri = 50 kΩ, and Is = 30 nA. Assume T =
        300 kelvin. Also determine the output for inputs of 0.5 V and 2 V
        with a neat diagram
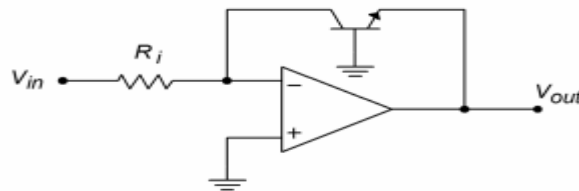
                              Or

    (b) Design a Astable multivibrator using IC 555 with its frequency of CO3- Ana   (16)
        oscillation is 1 KHz.

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