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Question Paper Code: 94404

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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 $12\mu\text{s}$. The slew rate is CO2-App
(a) $90\text{ v}/\mu\text{s}$ (b) $0.67\text{ v}/\mu\text{s}$ (c) $1.5\text{ v}/\mu\text{s}$ (d) $2.5\text{ v}/\mu\text{s}$
2. Which of the following functions does the antilog computation required to perform continuously with log-amps? CO1-U
(a) $\ln(x)$ (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 can be obtained by CO1-U
(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 addition to reference voltage? CO1-U
(a) Three (b) Two (c) One (d) None of the mentioned
5. A monostable multivibrator has $R = 120\text{k}\Omega$ and the time delay $T = 1000\text{ms}$, calculate the value of C? CO2- App
(a) $0.9\mu\text{F}$ (b) $1.32\mu\text{F}$ (c) $7.5\mu\text{F}$ (d) $2.49\mu\text{F}$

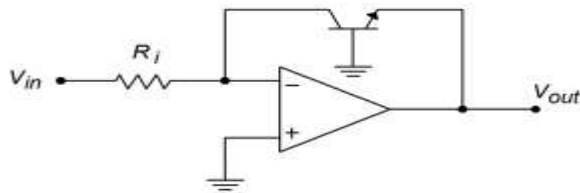
PART – B (5 x 3= 15 Marks)

6. A differential amplifier has a differential voltage gain of 2000 and common mode gain of 0.2. Determine CMRR in dB. CO2- App
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 $V_{in} = 1\text{ V}$, $R_i = 50\text{ k}\Omega$, and $I_s = 30\text{ nA}$. Assume $T = 300\text{ kelvin}$. 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.

