C **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U4404

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

Fourth Semester

Electronics and Communication Engineering

21UEC404-LINEAR INTEGRATED CIRCUITS

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. A completely compensated inverting amplifier is nulled at room temperature 25oC, determine the temperature at which the total output offset voltage will be zero? CO2-App

   (a) 50^oC (b) 25^oC (c) 75^oC (d) 125^oC.

2. Find the gain of the voltage to current converter with grounded load? CO2-App

   (a) 2 (b) 1 (c) ∞ (d) 0

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

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

5. The smallest resistor in a 12 bit weighted resistor DAC is 2.5kΩ, what will be the largest resistor value? CO1-U

   (a) 40.96MΩ (b) 10.24MΩ (c) 61.44 MΩ (d) 18.43MΩ

PART – B (5 x 3= 15Marks)

6. Why an open loop op-amp configuration is not used in linear applications? CO2- App

7. Design an amplifier with a gain of +5. CO1-U

8. Draw an adder circuits using operational amplifier to get the output expression on Vo= 10V1+V2+5V3. CO2-App

9. Why an integrator cannot be made using low pass RC circuit? CO1-U

10. What is the output of a 6 bit ladder D/A converter when it has an input of 101001. For 1 = 10 V and 0 = 0V. CO3-App

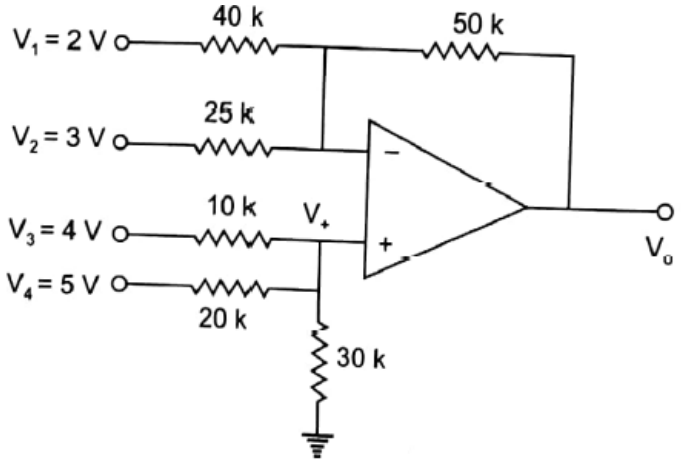
PART – C (5 x 16= 80Marks)

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

Or

(b) Explain the characteristics of Op – amp when the continuous input is applied at its input terminals. CO1-U (16)

12. (a) Find Vo for adder- subtractor as shown in fig. CO2-App (16)

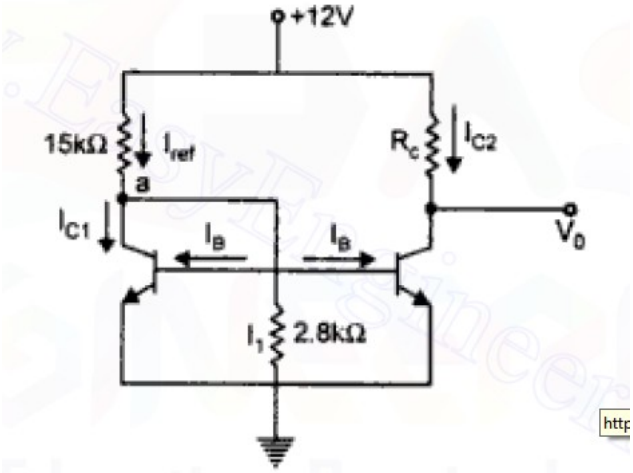


Or

(b) For the circuit shown in Fig. CO2-App (16)

i) Determine I_{c1} and I_{c2}

ii) Find Rc so that Vo = 6V. Assume β= 200.



13.	(a)	Design an Amplifier circuit to measure the low input signal which is used in industrial and consumer applications.	CO2-App	(16)
		Or		
	(b)	Design the circuits which produce triangular and spike wave output for square input signal.	CO2-App	(16)
14.	(a)	Design a Monostable operation using 555 timer with its frequency of oscillation is 1 KHz.	CO1- U	(16)
		Or		
	(b)	Design a current source using IC 7805 voltage regulator.	CO1-U	(16)
15.	(a)	Design a 3 bit weighted resistor DAC with neat diagram.	CO3- App	(16)
		Or		
	(b)	Design a 3 bit output Flash type ADC with neat diagram.	CO3-App	(16)