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

Question Paper Code: U4408

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Fourth Semester

Electronics and Communication Engineering

21UEC408-PRINCIPLES OF LINEAR INTEGRATED CIRCUITS

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. What is the use of notch and dot in DIP ICs? CO1-U

   (a) Determine the pin configuration (b) Designed to represent device type

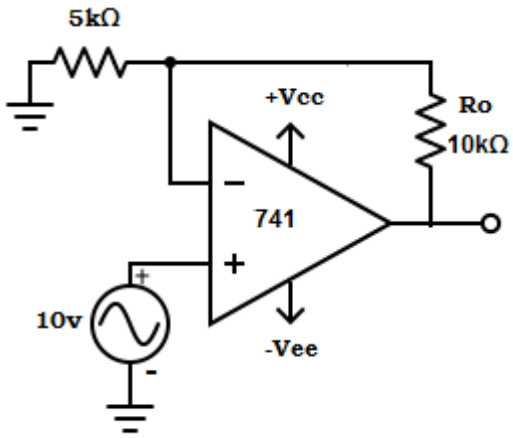
   (c) Represent property of IC (d) Find the pin number

2. What makes the output voltage equals to zero in practical op-amp? CO1-U

   (a) Input offset voltage (b) Output offset voltage

   (c) Offset minimizing voltage (d) Error voltage

3. Given voltage to current converter with floating load. Determine the output current? CO3- App



   (a) 3mA (b) 6mA (c) 4mA (d) 2mA

4. At which state the phase-locked loop tracks any change in input frequency? CO1- U

(a) Free running state (b) Capture state

(c) Phase locked state (d) All of the above

5. 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 above

PART – B (5 x 3= 15 Marks)

6. What is active load? Where it is used and why? CO1- U

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

8. Draw the output waveform of a clamper circuit with input signal amplitude of 5V and reference voltage of +2V. CO4 -App

9. In an Astablemultivibrator of 555 timer, R_A=606kΩ and C=0.1μF. Calculate (a) t HIGH (b) tLOW (c) free running frequency (d) duty cycle. CO5-App

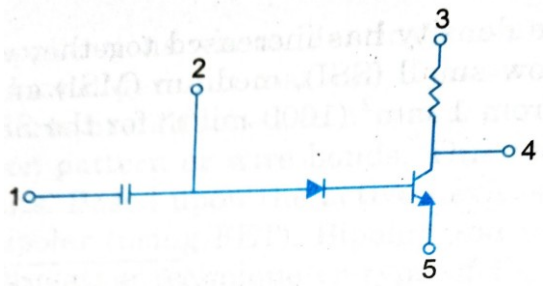
10. What is the output of a 6 bit ladder D/A converter when it has an input of 101001?For 1 = 10 V and 0 = 0V CO6- App

PART – C (5 x 16= 80 Marks)

11. (a) Design a 4KΩ resistor using basic planar process. CO2- App (16)

Or

(b) CO2- App (16)



Fabricate the above circuit using Basic planar process.

12. (a) (i) Explain the circuit which produce the output with 180^0 phase shift of the input signal and also produce the output with 0^0 phase shift of the input signal. CO1-U (16)

(ii) Illustrate the function of the current source which provides constant current in the load.

Or

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

13.	(a)	Design a circuit which is used in industry application to amplify the low input signal.	CO3- App	(16)
		Or		
	(b)	Design the circuits which produce triangular and spike waveform output for square wave input signal.	CO3- App	(16)
14.	(a)	Design a Monostable operation using 555 timer with its frequency of oscillation is 1 KHz.	CO4- App	(16)
		Or		
	(b)	Design a free running multivibrator using IC 555 with its frequency of oscillation is 1 KHz.	CO4- App	(16)
15.	(a)	Design a 3 bit R-2R ladder type DAC with neat diagram.	CO6- App	(16)
		Or		
	(b)	Design a 3 bit output Flash type ADC with neat diagram.	CO6- App	(16)