

		(OR)			
b)	i.	Explain the need of large CMRR value. How is it achieved?	5	K2	CO1
	ii.	For an inverting amplifier $R_1=1K\Omega$? $R_f=10K\Omega$?	8	K4	
		a. Calculate the maximum output offset voltage due to V_{OS} . Given $I_b = 300nA$, $I_{OS}=50nA$, $V_{OS} = 10mv$, $I_{OS} = 9nA$			
		b. Calculate the value of R_{COMP} needed to reduce the effect of I_b .			
		c. Calculate the maximum output offset if R_{comp} is connected in the circuit.			
12.	a)	Draw the circuit diagram and explain the working of an instrumentation amplifier. Mention the specific advantages of three op-amp instrumentation amplifier circuit.	13	K3	CO2
		(OR)			
b)		Draw the circuit of differentiator and write the expression for the output voltage V_O and also explain practical Differentiator with example.	13	K3	CO2
13.	a)	Design an Op-amp Schmitt trigger with $V_{UT}= 2V$, $V_{LT} = -4V$ and the output swings between $+10V$. If the input is $5\sin\omega t$, plot input & output waveforms.	13	K3	CO3
		(OR)			
b)	i.	Explain Positive clipper using op-amp.	7	K2	CO3
	ii.	Explain Precision Full Wave Rectifier using op-amp.	6	K2	
14.	a)	i.	7	K2	CO4
		State the advantages of IC voltage regulator. Explain the features and internal structure of general purpose Linear IC723 regulator.			
	ii.	Design a regulator using IC723 to meet the following specifications: $V_0=5V$, $I_0=100mA$, $V_{in}=15\pm 20\%$, $I_{SC}=150 mA$, $V_{SENSE}=0.7V$.	6	K4	
		(OR)			
b)	i.	Explain the working of inverted R-2R ladder type D/A converter.	7	K2	CO4
	ii.	Explain the working of success approximation ADC.	6	K2	
15.	a)	Discuss the operation of IC 555 as a monostable multivibrator and draw the waveform and explain.	13	K2	CO5
		(OR)			
b)		Explain working of PLL using appropriate block diagram and explain any one application of the same.	13	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	i. What is VCO? What is the purpose of VCO? Draw the block diagram and connection diagram of IC 566 VCO and explain.	6	K2	CO5
	ii. In the connection diagram of VCO shown below, +V = 12V, $R_2 = 1.5K\Omega$, $R_1=R_3=10K\Omega$ and $C_1=0.001F$, a. Determine the nominal frequency of output waveform. b. Compute the modulation frequency in the output frequency if control voltage is varied between 9.5V and 11.5V.	9	K2	
	(OR)			
b)	i. Compare single slope ADC and dual slope ADC.	7	K2	CO4
	ii. For a particular dual slope ADC, t_1 is 83.33 ms and the reference voltage is 100 mV. Calculate t_2 if a. V_1 is 100 mV and. b. 200 mV.	8	K4	