Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019

Subject Code: 2141706 **Date: 14/12/2019**

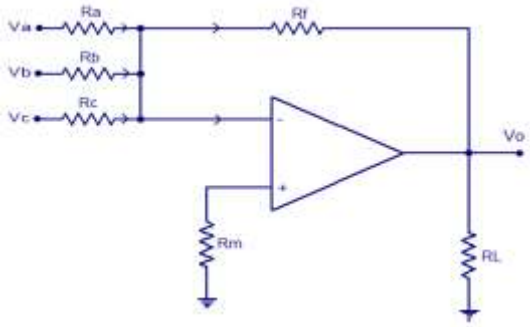
Subject Name: Analog Signal Processing

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Draw the pin diagram of op-amp 741 and explain the function of each pin.	**03**
	(b)	Define the following terms: (i) Common mode rejection ratio (ii) Slew Rate (iii) Supply voltage rejection ratio (iv) Input offset voltage	**04**
	(c)	Draw and explain the Voltage series feedback amplifier (Non-inverting amplifier with feedback), also derive the equation of close loop voltage gain.	**07**
Q.2	**(a)**	Draw and explain the Unity Gain Amplifier.	**03**
	(b)	If Ra= Rb=Rc=Rm=2kΩ, Rf = 3 kΩ, RL = 5 kΩ , Va=0.75v, Vb=1v and Vc=1.25v, Find the value of Vo.	**04**



	(c)	Write short note on RC phase shift Oscillator.	**07**
		OR	
	(c)	Write a short note on Wien Bridge oscillator.	**07**
Q.3	**(a)**	Draw and explain the V-I converter circuit with floating load.	**03**
	(b)	Draw and explain the Schmitt trigger circuit with the help of op-amp.	**04**
	(c)	Explain differentiator circuit using op-amp in detail.	**07**
		OR	
Q.3	**(a)**	Enlist six ideal characteristics of op-amp 741.	**03**
	(b)	Short note: Sub-tractor amplifier using op amp.	**04**
	(c)	Explain integrator circuit using op-amp in detail.	**07**
Q.4	**(a)**	Draw and explain the Averaging amplifier.	**03**
	(b)	Describe the working of Zero crossing detector.	**04**
	(c)	Draw and explain the Successive Approximation type ADC.	**07**
		OR	
Q.4	**(a)**	Draw and explain the circuit diagram of the Negative Clipper.	**03**
	(b)	Write a short note on instrumentation amplifier using three op-amps.	**04**
	(c)	Explain in detail the binary weighted register type D/A converter.	**07**
Q.5	**(a)**	Explain all - pass filter with necessary diagrams.	**03**
	(b)	Draw and explain the circuit diagram of the Positive Clamper.	**04**

	(c)	Explain the monostable multivibrator using 555 timer with its internal block diagram and its timing waveforms.	**07**

OR

Q.5	**(a)**	Explain band-pass filter with necessary diagrams.	**03**
	(b)	Draw and explain the offset voltage compensating network for non-inverting amplifier.	**04**
	(c)	Explain the astable multivibrator using 555 timer with its internal block diagram and its timing waveforms.	**07**

****