Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV EXAMINATION – SUMMER 2020

Subject Code: 2141706 **Date:29/10/2020**

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.**

			MARKS
Q.1	**(a)**	Draw only symbol and block diagram of op-amp.	**03**
	(b)	Enlist Ideal characteristics of an Op-Amp.	**04**
	(c)	Explain the following terms: (i) Input offset voltage (ii) Differential Input resistor (iii) CMRR (iv) SVRR (v) output voltage swing (vi) Large signal voltage gain (vii) Input bias current.	**07**
Q.2	**(a)**	Explain Voltage to Current Converter with Floating Load.	**03**
	(b)	Draw an op-amp based differential amplifier circuit and obtain expression for its differential gain.	**04**
	(c)	Explain summing, scaling and averaging amplifier using Non-inverting configuration of operational amplifier.	**07**
		OR	
	(c)	Derive the gain formula of Voltage shunt amplifier.	**07**
Q.3	**(a)**	Explain Positive Clamper circuit.	**03**
	(b)	Draw the circuit: 1. Wide band Pass filter and 2. Narrow band pass filters.	**04**
	(c)	What is DAC? Draw and explain binary weighted resistor DAC.	**07**
		OR	
Q.3	**(a)**	Explain Positive clipper circuit.	**03**
	(b)	Draw the circuit diagram: (1) All pass filter. (2) High pass filter.	**04**
	(c)	Explain integrator circuit along with circuit diagram.	**07**
Q.4	**(a)**	What is the offset-minimizing resistor ROM?	**03**
	(b)	Explain the offset voltage compensating network for non-inverting amplifier.	**04**
	(c)	Explain basic differentiator and practical differentiator circuit in detail.	**07**
		OR	
Q.4	**(a)**	Draw oscillator bock diagram and write principles.	**03**
	(b)	Explain the Phase shift oscillator.	**04**
	(c)	Explain Instrumentation amplifier using three op-amps for resistive transducer and bridge.	**07**
Q.5	**(a)**	Explain Logarithmic amplifier.	**03**
	(b)	Explain Wien bridge oscillator.	**04**
	(c)	Draw and explain the 555 timer pin connection diagram and block diagram.	**07**
		OR	
Q.5	**(a)**	Explain in brief: Schmitt trigger circuit.	**03**
	(b)	Draw and explain the working of isolation amplifier.	**04**
	(c)	Explain the working of 555 timers as an astable multivibrator with block diagram and waveforms.	**07**