Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2018

Subject Code:2141706 **Date:10/12/2018**

Subject Name:Analog Signal Processing

Time: 02:30 PM TO 05:00 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 the buffer circuit using op-amp.	**03**
	(b)	Design practical integrator circuit to integrate 20Khz.square wave signal.	**04**
	(c)	Discuss three op-amp design of Instrumentation amplifier. Derive its transfer function.	**07**
Q.2	**(a)**	Draw dual input unbalanced differential amplifier using transistors.	**03**
	(b)	Give the IC numbers of any op-amps used for loop control and low error signal conditioning circuits.	**04**
	(c)	Draw Active second order high pass butter worth filter. Derive its transfer function.	**07**
		OR	
	(c)	Draw Active second order low pass butter worth filter. Derive its transfer function	**07**
Q.3	**(a)**	What is the significance of input impedance value in signal conditioning circuit. Give input impedance value of op amp 741.	**03**
	(b)	Draw the inverting amplifier circuit using op-amp to convert 0 to 2 V signal into 0 to 1 volt output.	**04**
	(c)	Draw circuit diagram for astable multivibrator using 555 IC. Select the component values for 1ms ON time.	**07**
		OR	
Q.3	**(a)**	Define PSRR for op-amp. Give its value for 741 op-amp .	**03**
	(b)	Draw the non inverting amplifier circuit using op-amp to convert 0 to 3 v input signal into 0 to 1 v output signal.	**04**
	(c)	Draw circuit diagram for monostable multivibrator using 555 IC.Select the component values for 3ms ON time.	**07**
Q.4	**(a)**	Give barkhausen criteria for oscillator design.	**03**
	(b)	Design wien bridge oscillator	**04**
	(c)	Discuss R-2R type ADC.	**07**
		OR	
Q.4	**(a)**	An op-amp circuit designed as an amplifier starts functioning as an oscillator. What remedy should I apply to bring this circuit out of oscillation?	**03**
	(b)	Design Quadrature oscillator	**04**
	(c)	Discuss binary weghted type DAC.	**07**
Q.5	**(a)**	Discuss the need of isolation amplifier in instrumentation circuits.	**03**
	(b)	Draw negetive voltage limiter circuit using op-amp. The design should limit the output voltage to -5 v.	**04**

	(c)	Design voltage to current conveter circuit for grounded load,using op-amp. The circuit should produce 1mA current per change in 1 V dc input.	**07**

OR

Q.5	**(a)**	Draw small signal full wave rectifier circuit using op-amp.This rectifier should produce 2 V Dc output. Draw the waveforms of output with indicated values.	**03**
	(b)	Draw programmable gain amplifier circuit.	**04**
	(c)	Draw the circuit diagram for band pass and band rejection filter.	**07**

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