Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV EXAMINATION – SUMMER 2020

Subject Code: 3141002 **Date:26/10/2020**

Subject Name: Analog Circuit Design

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)**	List ideal characteristics of OP-AMP.	**03**
	(b)	Define following terms. Slew Rate, CMRR, SVRR, I/P offset voltage.	**04**
	(c)	Explain inverting differentiator circuit using OP-AMP.	**07**
Q.2	**(a)**	Derive gain expression for voltage series F/B amplifier using OP-AMP.	**03**
	(b)	Explain window detector using OP-AMP.	**04**
	(c)	Write and explain differential amplifier using two OP-AMP.	**07**
		OR	
	(c)	Explain Schmitt trigger circuit operation using OP-AMP.	**07**
Q.3	**(a)**	Explain circuit made up of OP-AMP that does subtraction.	**03**
	(b)	Explain All pass filter using OP-AMP.	**04**
	(c)	Explain chebyshev filter using OP-AMP with derivations.	**07**
		OR	
Q.3	**(a)**	Define following terms. Lock Range for PLL, Capture Range for PLL, Frequency Stability for Oscillators.	**03**
	(b)	Explain class B push pull power amplifier.	**04**
	(c)	Draw and explain triangular wave generator using OP-AMP.	**07**
Q.4	**(a)**	Explain I to V converter using OP-AMP.	**03**
	(b)	Explain phase shift oscillator using OP-AMP in detail.	**04**
	(c)	Explain CE short-circuit current gain including resistive load R_L.	**07**
		OR	
Q.4	**(a)**	Explain voltage limiter circuit using OP-AMP with suitable example.	**03**
	(b)	Draw and explain class A power amplifier.	**04**
	(c)	Derive expression for trans-conductance gm in Hybrid – π model.	**07**
Q.5	**(a)**	Design Monstable multivibrator for T_P = 11 millisecond, take C = 0.01 milliferad.	**03**
	(b)	Explain PLL using functional block diagram.	**04**
	(c)	Explain 555 A-stable multivibrator.	**07**
		OR	
Q.5	**(a)**	Write short note on adjustable voltage regulator.	**03**
	(b)	Design A-stable multivibrator using IC 555 for Ton = 50% of T, take F= 1 KHz, C = 0.1 milliferad.	**04**
	(c)	Explain Monostable multivibrator using IC 555.	**07**

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