Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(NEW) EXAMINATION – WINTER 2022

Subject Code:3141002 Date:13-12-2022

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define following terms. CMRR, PSRR, Slew Rate.	**03**
	(b)	Explain Voltage Transfer Curve of OP-AMP.	**04**
	(c)	Write and explain differential amplifier using two OP-AMP.	**07**
Q.2	**(a)**	List OP-AMP's ideal characteristics.	**03**
	(b)	Derive gain expression for voltage series F/B amplifier using OP-AMP.	**04**
	(c)	Explain inverting differentiator circuit using OP-AMP.	**07**
		OR	
	(c)	Explain instrumentation amplifier circuit operation using OP-AMP.	**07**
Q.3	**(a)**	Explain circuit made up of OP-AMP that does average of inputs.	**03**
	(b)	Explain Schmitt trigger circuit using OP-AMP.	**04**
	(c)	Explain 2^{nd} order low pass 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 power amplifier.	**04**
	(c)	Draw and explain triangular wave generator using OP-AMP.	**07**
Q.4	**(a)**	Explain floating load V to I converter using OP-AMP.	**03**
	(b)	Explain phase shift oscillator using OP-AMP in detail.	**04**
	(c)	Explain CE short-circuit current gain with resistive load R_L.	**07**
		OR	
Q.4	**(a)**	Explain sample hold circuit using OP-AMP.	**03**
	(b)	Draw and explain class AB power amplifier.	**04**
	(c)	Derive expression for trans-conductance gm in Hybrid – π model.	**07**
Q.5	**(a)**	Design Monstable multivibrator using timer IC for T_P = 11 millisecond, take C = 0.1 microferad.	**03**
	(b)	Write short note on voltage regulator.	**04**
	(c)	Explain A-stable multivibrator using timer IC.	**07**
		OR	
Q.5	**(a)**	Explain half wave rectifier circuit using OP-AMP.	**03**
	(b)	Design A-stable multivibrator using IC 555 for Ton = 75% of T, take F= 1 KHz, C = 0.1 microferad.	**04**
	(c)	Explain monostable multivibrator using IC 555.	**07**

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