GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2021

Subject Code:3141002   **Date:31/12/2021**
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. SVRR, Slew Rate, CMRR.	03
	(b)	List ideal characteristics of OP-AMP.	04
	(c)	Explain inverting integrator circuit using OP-AMP.	07
Q.2	(a)	Derive gain expression for voltage shunt F/B amplifier using OP-AMP.	03
	(b)	Explain peak detector using OP-AMP.	04
	(c)	Write and explain differential amplifier using three 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 addition of inputs.	03
	(b)	Explain 1st order low pass filter using OP-AMP.	04
	(c)	Explain 2nd order high 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 A power amplifier.	04
	(c)	Draw and explain square wave generator using OP-AMP.	07
Q.4	(a)	Explain grounded load V to I converter using OP-AMP.	03
	(b)	Explain wien bridge oscillator using OP-AMP in detail.	04
	(c)	Explain CE short-circuit current gain without 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 B push pull power amplifier.	04
	(c)	Derive expression for trans-conductance gm in Hybrid – π model.	07
Q.5	(a)	Design Monstable multivibrator for T_P = 1.1 millisecond, take C = 0.1 milliferad.	03
	(b)	Write short note on voltage regulator.	04
	(c)	Explain 555 Monostable multivibrator.	07
		OR	
Q.5	(a)	Explain sample and hold circuit using OP-AMP.	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 A-stable multivibrator using IC 555.	07

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