Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – WINTER 2023

Subject Code:2130902 Date:18-01-2024

Subject Name:Analog Electronics

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)**	Briefly explain block-diagram representation of op-amp.	**03**
	(b)	List the advantages of negative feedback in amplifiers.	**04**
	(c)	Explain in detail class B push pull power amplifier with circuit diagram.	**07**
Q.2	**(a)**	What is the effect of negative feedback on bandwidth? Explain briefly.	**03**
	(b)	Define following: (1) PSRR (2) CMRR (3) Input bias current (4) Gain-Bandwidth product	**04**
	(c)	Explain in detail closed-loop differential amplifier with one op-amp.	**07**
		OR	
	(c)	Explain in detail JFET amplifier in common drain configuration.	**07**
Q.3	**(a)**	List out the characteristics of ideal op-amp.	**03**
	(b)	Draw and explain equivalent circuit of op-amp.	**04**
	(c)	Write a short-note on summing, scaling and averaging amplifier in inverting mode.	**07**
		OR	
Q.3	**(a)**	Draw and explain voltage-to-current converter circuit with grounded load.	**03**
	(b)	Write a short-note on the peaking amplifier.	**04**
	(c)	Define input offset and output offset voltages. Draw and explain the offset null circuit for op-amp 741.	**07**
Q.4	**(a)**	Write a short-note on Slew rate along with effect of slew rate in applications.	**03**
	(b)	Briefly explain: (i) Open-loop inverting amplifier (ii) Open-loop non-inverting amplifier.	**04**
	(c)	Write a short-note on second-order low-pass butterworth filter.	**07**
		OR	
Q.4	**(a)**	State the advantages of active filters over passive filters?	**03**
	(b)	Describe the operation of a LM 317 voltage regulators.	**04**
	(c)	Explain the practical integrator circuit with diagram and waveforms.	**07**

Q.5	**(a)**	Compare positive and negative feedbacks for amplifiers.	**03**
	(b)	Draw the neat sketch of Schmitt Trigger circuit and explain how it works.	**04**
	(c)	Explain the working of IC 555 as an astable multivibrator.	**07**
		OR	
Q.5	**(a)**	Briefly explain the block diagram of 555 timer IC.	**03**
	(b)	Draw and discuss block diagram of PLL.	**04**
	(c)	Draw and explain instrumentation amplifier using op-amp.	**07**

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