Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–III (NEW) EXAMINATION – WINTER 2024

Subject Code: 3130907 **Date: 29-11-2024**

Subject Name: Analog & Digital 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)**	Explain memory and differentiate between 1-bit memory and 1-byte memory.	**03**
	(b)	Describe Amplifiers and Oscillators. State basic difference between them.	**04**
	(c)	Draw and explain working of zero crossing detector, and state its applications.	**07**
Q.2	**(a)**	Define input bias current, input offset current, and slew rate.	**03**
	(b)	State the non-idealities in an op-amp.	**04**
	(c)	Draw and explain the internal structure of an operational amplifier.	**07**
		OR	
	(c)	Draw and explain the working of a differential amplifier.	**07**
Q.3	**(a)**	Write the features of an ideal op-amp.	**03**
	(b)	Draw and explain Op-Amp as an integrator.	**04**
	(c)	Draw and explain the working of an inverting amplifier.	**07**
		OR	
Q.3	**(a)**	Explain Op-amp as phase shift amplifier.	**03**
	(b)	Draw and explain Op-Amp as an instrumentation amplifier.	**04**
	(c)	Draw and explain summing amplifier.	**07**
Q.4	**(a)**	Compare combinational and sequential circuits.	**03**
	(b)	Draw and explain peak detector.	**04**
	(c)	State and explain don’t care conditions in K-Map. Give suitable example.	**07**
		OR	
Q.4	**(a)**	Explain in brief the difference between latch and flip-flop.	**03**
	(b)	Draw and explain precision rectifier.	**04**
	(c)	State truth table of full subtractor and design it using 3 X 8 decoder.	**07**
Q.5	**(a)**	State applications of shift registers.	**03**
	(b)	Explain parallel comparator A/D converter	**04**
	(c)	Discuss asynchronous and synchronous counters. Compare them.	**07**
		OR	
Q.5	**(a)**	Explain sample and hold circuit.	**03**
	(b)	Draw and explain the working of RS Flip-Flop.	**04**
	(c)	Draw and explain the working of successive approximation A/D converter.	**07**

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