Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3130907 Date:18-01-2024

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)**	Draw transistor C-E amplifier circuit. Draw its ac equivalent circuit.	**03**
	(b)	What is cross over distortion in power amplifier?	**04**
	(c)	Draw equivalent circuit of OP-Amp. Explain each part.	**07**
Q.2	**(a)**	List applications of instrumentation amplifier.	**03**
	(b)	Prove that voltage follower has unity gain.	**04**
	(c)	Discuss the classification of active filter and explain the frequency response of each type.	**07**
		OR	
	(c)	What do you mean by slew rate in an OP-AMP? Also mention about causes of slew rate and explain its significance in applications.	**07**
Q.3	**(a)**	How to detect peak of waveform using OP-AMP?	**03**
	(b)	Sketch and explain Wein bridge oscillator.	**04**
	(c)	Draw and explain the use of op-amp as a zero-crossing detector.	**07**
		OR	
Q.3	**(a)**	Explain how to generate triangular wave using OPAMP.	**03**
	(b)	Write a short note on Precision rectifier.	**04**
	(c)	Draw and explain the block diagram of basic three terminal IC regulator.	**07**
Q.4	**(a)**	Explain the different types of triggering methods used for flip flops.	**03**
	(b)	Write short note on binary codes.	**04**
	(c)	Explain Master-Slave J-K flip-flop configuration.	**07**
		OR	
Q.4	**(a)**	What is multiplexer?	**03**
	(b)	Design full adder circuit.	**04**
	(c)	Minimize following Boolean function using K-map and implement using basic logic gates: $F(A,B,C,D) = \sum m(1, 2, 3, 8, 9, 11, 14)$ with $d(7, 15)$	**07**
Q.5	**(a)**	Define following specification of DAC a) Accuracy b) Resolution c) Setting time	**03**
	(b)	Compare combinational logic circuit with sequential logic circuit.	**04**
	(c)	Design a 4 bit synchronous up counter.	**07**

OR

Q.5	**(a)**	Sketch sample and hold circuit and explain its working.	**03**
	(b)	Which are the different methods for A/D conversion?	**04**
	(c)	Explain in detail 7 segment LED display.	**07**

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