Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3130305 Date:24-02-2023

Subject Name:Advanced Electronics

Time:02:30 PM TO 05:00 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)**	What is Transistor?	**03**
	(b)	Explain operation of Transistor in CB configuration.	**04**
	(c)	Design a power supply with +9V & -9V output by specifying all component names and values.	**07**
Q.2	**(a)**	Draw & explain pin diagram of 741 op-amp.	**03**
	(b)	Explain ideal characteristics of op-amp.	**04**
	(c)	Enlist the types of Relays and explain any one with neat diagram.	**07**
		OR	
	(c)	Design Instrumentation amplifier of 1000 gain using 3 op-amps.	**07**
Q.3	**(a)**	Describe Voltage follower with its need.	**03**
	(b)	Design op-amp based Integrator circuit with input-output waveforms.	**04**
	(c)	Explain different close loop configuration of op-amp with output voltage equation.	**07**
		OR	
Q.3	**(a)**	Describe various Noise sources in op-amp.	**03**
	(b)	Design op-amp based Differentiator circuit with input-output waveforms.	**04**
	(c)	Explain application of op-amp as summing, scaling and averaging amplifier with equations.	**07**
Q.4	**(a)**	Explain different oscillator principles.	**03**
	(b)	Draw approximate response of different types of filters.	**04**
	(c)	Design 120 Hz 2^{nd} order Butterworth low-pass filter. (C=1µF)	**07**
		OR	
Q.4	**(a)**	Write a short note on Wein bridge oscillator.	**03**
	(b)	Explain 555 Timer circuit as Astable multivibrator.	**04**
	(c)	Design 50 Hz active Notch filter. (C=0.1µF)	**07**
Q.5	**(a)**	Enlist types of Power amplifier with its operating region.	**03**
	(b)	Draw VI characteristics & symbol for DIAC and TRIAC.	**04**
	(c)	Explain basic structure and operation of Schockley Diode.	**07**
		OR	
Q.5	**(a)**	Describe Class-AB push pull operation of amplifier.	**03**
	(b)	Explain the Operation of Class-A power amplifier.	**04**
	(c)	Explain basic structure and operation of SCR.	**07**

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