Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – WINTER 2021

Subject Code:3130305 Date:21-02-2022

Subject Name:Advanced 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 the working principle of the relay with the help of a diagram.	**03**
	(b)	Draw and explain a block diagram of an operational amplifier.	**04**
	(c)	Draw and explain differential amplifier using transistor.	**07**
Q.2	**(a)**	List out the ideal characteristics of Op-amp.	**03**
	(b)	Explain the importance of Virtual ground with a help diagram.	**04**
	(c)	Draw and explain a closed-loop configuration of Inverting and Non inverting amplifier. Derive the gain equation.	**07**
		OR	
	(c)	Draw and explain the Op-amp based differential amplifier and derive the gain equation.	**07**
Q.3	**(a)**	List out the application of the Instrumentation amplifier and mention essential characteristics.	**03**
	(b)	Draw a circuit diagram of voltage follower and derive the gain equation.	**04**
	(c)	Draw and explain the integrator circuit and derive its equation.	**07**
		OR	
Q.3	**(a)**	List out different Noise sources, and its effect on output response.	**03**
	(b)	Draw an ideal response of Filters.	**04**
	(c)	Write a brief note on Noise Colors.	**07**
Q.4	**(a)**	Draw a Guard driving with AD620.	**03**
	(b)	Design a 2^{nd} Order Low Pass filter. (Cut of Frequency – 500 Hz)	**04**
	(c)	Design an active notch filter of 50 Hz.	**07**
		OR	
Q.4	**(a)**	Define Oscillator. List out the different types of Oscillators.	**03**
	(b)	Draw and explain the operation of the Class A amplifier in detail.	**04**
	(c)	Explain the load and line regulation in detail.	**07**
Q.5	**(a)**	Draw and explain V to I converter circuit	**03**
	(b)	Explain the essential operation of DIAC.	**04**
	(c)	Design the wein bridge oscillator using op-amp for f_0 = 500 Hz.	**07**
		OR	
Q.5	**(a)**	List out the application of Power Amplifier and mention their types.	**03**
	(b)	Draw and explain the 1st and 2nd order active High pass filter for the cut off frequency 1 KHz, C= 0.1uf.	**04**
	(c)	Draw and explain the circuit diagram of an astable multivibrator as a square wave generator.	**07**

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