Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3130305 Date:28-07-2023

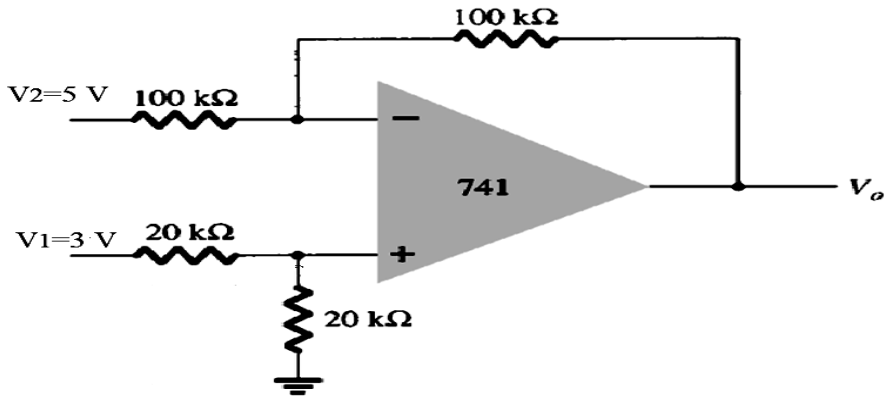
Subject Name:Advanced Electronics

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)**	Why Op-Amp is called versatile device? Give pin diagram of Op-Amp.	**03**
	(b)	Explain Open loop Inverting and Non-inverting amplifier.	**04**
	(c)	Design instrumentation amplifier with the gain of 10.	**07**
Q.2	**(a)**	Enlist ideal characteristics of Op-Amp.	**03**
	(b)	Compare Inverting and Non-inverting amplifier.	**04**
	(c)	Explain how Op-Amp can work like Summing, Scaling and averaging amplifier.	**07**
		OR	
	(c)	Explain the circuit of Op-amp as Differentiator. Also derive equation of gain.	**07**
Q.3	**(a)**	Design an amplifier for gain 03. Also draw sample input-output waveforms.	**03**
	(b)	Justify following characteristic of Ideal Op-Amp: The output impedance (Ro) must be zero.	**04**
	(c)	Explain the design of 1st order High pass op-amp filter.	**07**
		OR	
Q.3	**(a)**	For the below given circuit, calculate Output voltage V_0. Consider input DC voltage V1=3 Volt & V2=5 Volt.	**03**



	(b)	Justify following characteristic of Ideal Op-Amp: The input impedance (Ri) must be infinite.	**04**
	(c)	Explain the design of band stop op-amp filter.	**07**
Q.4	**(a)**	Explain working principle of Electromagnetic relay.	**03**

	(b)	Design Phase-shift oscillator for oscillation frequency 200 Hz.	**04**
	(c)	Explain structure and operation of SCR.	**07**
		OR	
Q.4	**(a)**	Explain working principle of solid state relay.	**03**
	(b)	Enlist application of 555 Timer. Explain working of astable operation.	**04**
	(c)	Explain basic construction and operation of UJT.	**07**
Q.5	**(a)**	Write brief note on any two types of Op-Amp noise.	**03**
	(b)	Explain the working of Phase locked loop circuit.	**04**
	(c)	Explain Operation of Class B amplifier.	**07**
		OR	
Q.5	**(a)**	Explain basic operation of DIAC & TRIAC.	**03**
	(b)	Explain working of transistor as a switch.	**04**
	(c)	Explain functioning of differential amplifier using transistors.	**07**

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