Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III EXAMINATION – SUMMER 2020

Subject Code: 2130305 **Date:29/10/2020**

Subject Name: ANALOG CIRCUITS-I

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.**

			MARKS
Q.1	**(a)**	Draw and explain negative and positive clipper.	**03**
	(b)	List out the application for JFET.	**04**
	(c)	Draw CE transistor configuration and give its input and output characteristics. Also derive the relation between current gain of CE, CB and CC configuration.	**07**
Q.2	**(a)**	Compare MOSFET with JFET.	**03**
	(b)	Derive relationship between αdc and βdc of a transistor.	**04**
	(c)	What is biasing? Why biasing is required for transistor? List biasing methods for transistor. Draw and explain the circuit of voltage divider biasing	**07**
		OR	
	(c)	Draw and explain P-channel JFET.	**07**
Q.3	**(a)**	What do you mean by feedback? Explain why series voltage feedback connection is mostly used	**03**
	(b)	Explain series voltage feedback in detail.	**04**
	(c)	Draw and explain N-channel D –MOSFET.	**07**
		OR	
Q.3	**(a)**	Define 1) CMRR 2) Slew Rate 3) Input offset voltage	**03**
	(b)	Draw the block diagram of an op-amp and write the function of each block in details.	**04**
	(c)	Describe the log amplifier using op-amps.	**07**
Q.4	**(a)**	Why open loop configuration is not used for linear applications?	**03**
	(b)	Write ideal and practical values of any four characteristics of an op – amp.	**04**
	(c)	Draw the circuit of a V-I converter and derive an expression for the output current in terms of input voltage	**07**
		OR	
Q.4	**(a)**	Compare between Schmitt Trigger and Comparator.	**03**
	(b)	Draw the circuit diagram of close loop non-inverting amplifier and derive expression of its voltage gain.	**04**
	(c)	Draw the circuit diagram of basic integrator and practical integrator and derive expression.	**07**
Q.5	**(a)**	Draw the circuit diagram for basic triangular square wave generator.	**03**
	(b)	Draw and explain Window detector using IC 741.	**04**
	(c)	Draw and explain Inverting Schmitt Trigger using IC 741.	**07**

OR

Q.5	**(a)**	What do you mean by oscillator and explain its needs?	**03**
	(b)	Explain the wein bridge oscillator in detail.	**04**
	(c)	Draw the circuit diagram of differential amplifier using three op-amp and write its output equation.	**07**

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