GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2021

Subject Code:2140305   **Date:06/09/2021**

Subject Name:Analog Circuits-II

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 capacitive and inductive crosstalk?	**03**
	(b)	Draw and explain the circuit diagram of the DC Amplifier.	**04**
	(c)	Why do we use the instrumentation amplifier? What is difference between differential and instrumentation amplifier? Draw the circuit diagram of Instrumentation amplifier and mention the gain equation.	**07**
Q.2	**(a)**	What are the safety standards required for the medical amplifier?	**03**
	(b)	Explain the mechanism of cooling and mention the advantages of a heat sink.	**04**
	(c)	Write a note on grounding and shielding techniques.	**07**
		OR	
	(c)	What is the role of Isolation amplifier? Mention the types of isolation amplifier. Explain any one isolation amplifier in detail.	**07**
Q.3	**(a)**	What are the problems associated with power supplies?	**03**
	(b)	Differentiate between linear power supplies and switching power supplies.	**04**
	(c)	Draw and explain the block diagram of a linear power supply.	**07**
		OR	
Q.3	**(a)**	Define the following parameters in detail. 1) Noise Floor 2) SNR 3) Noise corner frequency	**03**
	(b)	Write a note on Shot Noise. Also, mention the equation for the shot noise calculation.	**04**
	(c)	Write a brief note on noise colors.	**07**
Q.4	**(a)**	Define the below-given terms. 1) Active vs Passive Filter 2) Analog vs Digital filter	**03**
	(b)	Design 2nd order low pass filter circuit for cut of frequency 1.5 kHz.	**04**
	(c)	Draw and explain 1st order wide bandpass filter for cut off frequency 500 Hz and 1500 Hz.	**07**
		OR	
Q.4	**(a)**	What is need for modulation?	**03**
	(b)	Draw a circuit diagram of notch filter for the cut off frequency 50 Hz.	**04**
	(c)	Write a note on amplitude modulation generation techniques.	**07**
Q.5	**(a)**	Explain the need for pulse modulation.	**03**
	(b)	What is the amplitude modulation? Derive the mathematical expression for amplitude modulation.	**04**
	(c)	Comparison between PAM, PWM, and PPM.	**07**

OR

Q.5	(a)	Draw and explain the block diagram of FM Transmitters.	**03**
	(b)	What is frequency modulation? Derive the mathematical expression for frequency modulation.	**04**
	(c)	Explain the working principles of CRO with the help of a block diagram.	**07**

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