Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2140305 **Date: 03/06/2017**

Subject Name: Analog Circuits-II

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Define following	
		a) Noise floor	01
		b) RMS noise	01
		c) SNR	01
		d) Avalanche noise	01
		e) Noise corner frequency	01
		f) Capacitive cross talk	01
		g) Inductive cross talk	01
	2	Write units for opamp noise.	01
	3	Which noises are white noise?	01
	4	Avalanche noise has _____ color.	01
	5	What do you mean by susceptibility?	01
	6	What is intrinsic noise?	01
	7	What is CMRR?	01
	8	Which noise is popcorn noise?	01
Q.2	**(a)**	Draw the instrumentation amplifier circuit with gain 3.	**03**
	(b)	Write a short note on Chopper stabilized amplifier.	**04**
	(c)	What do you mean by isolation amplifier? Explain optoisolator in detail.	**07**
		OR	
	(c)	Write a short note on Liner Power supply.	**07**
Q.3	**(a)**	Derive the equation for first order LPF. Also draw the circuit diagram & equation.	**03**
	(b)	Design a second order HPF with gain 4 and cut off frequency 5 KHz.	**04**
	(c)	Explain wide band pass filter with neat sketch.	**07**
		OR	
Q.3	**(a)**	Derive the equation for first order HPF. Also draw the circuit diagram & equation.	**03**
	(b)	Design a second order LPF with gain 4 and cut off frequency 5 KHz.	**04**
	(c)	Explain wide band reject filter with neat sketch.	**07**
Q.4	**(a)**	Derive power relations in AM for voltage.	**03**
	(b)	Write a short note on Thermal noise.	**04**
	(c)	Write a short note on need of modulation.	**07**
		OR	
Q.4	**(a)**	What do you mean by FM? Derive equation and draw its frequency spectrum.	**03**
	(b)	A TLE2027 op amp with a noise specification of 2.5 nv/$\sqrt{Hz}$ is used over an audio frequency range of 20 Hz to 20 kHz, with a gain of 40 dB. Calculate value of output noise.	**04**
	(c)	Explain PWM, PPM and PCM with diagram in brief.	**07**

Q.5	**(a)**	Write a short note on capacitive coupling.	**03**
	(b)	Enlist various methods which can reduce noise.	**04**
	(c)	Write a short note on magnetic recorder.	**07**

OR

Q.5	**(a)**	Write a short note on ESD protection techniques.	**03**
	(b)	Write a short note on Medical safety standards	**04**
	(c)	Draw the block diagram of CRO. Explain function of each block in brief.	**07**

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