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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 151004 **Date: 27/04/2017**

Subject Name: Electronic Communication

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.**

Q.1	**(a)**	What is modulation? Why modulation is required? Explain in detail.	**07**
	(b)	Draw the general block diagram of a super heterodyne receiver and briefly explain the function of each block.	**07**
Q.2	**(a)**	State and prove scaling property, time shifting property and frequency shifting property of Fourier transform.	**07**
	(b)	Discuss shot noise, partition noise and flicker noise in detail.	**07**
		OR	
	(b)	Derive Friis's formula to define noise factor of amplifiers in cascade.	**07**
Q.3	**(a)**	Explain Amplitude Modulation with required waveforms. Also give mathematical representation of Amplitude modulated Wave.	**07**
	(b)	With the help of neat diagram and waveform explain the operation of envelop detector	**07**
		OR	
Q.3	**(a)**	An AM signal is represented by $e(t) = (10+ 4 \cos 1000 \pi t) \cos (2 \pi 10^6 t)$ Find: Modulation index, percentage modulation index, frequencies of sidebands and amplitude of each sideband.	**07**
	(b)	List different types of Amplitude Modulated Signal and explain them in detail.	**07**
Q.4	**(a)**	Explain why de-emphasis is used in FM reception. Explain de-emphasis in detail.	**07**
	(b)	Draw the block diagram for an Armstrong indirect FM transmitter and describe its operation	**07**
		OR	
Q.4	**(a)**	Advantages and disadvantages of FM and AM.	**07**
	(b)	Discuss basic principle of FM detection and Explain foster seeley discriminator with neat diagram.	**07**
Q.5	**(a)**	What do you mean by Tracking? Explain with figures: Padder Tracking, trimmer tracking and Three points tracking.	**07**
	(b)	Draw parallel tuned circuit and derive the equation for resonant frequency and Q factor.	**07**
		OR	
Q.5	**(a)**	Explain AGC and discuss difference between simple AGC and Delayed AGC.	**07**
	(b)	Draw series tuned circuit and derive the equation for resonant frequency and Q factor.	**07**

****