Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) EXAMINATION – WINTER 2018

Subject Code:151004 **Date: 11/12/2018**

Subject Name: Electronic Communication

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.**

Q.1	**(a)**	What is noise? Explain thermal noise.	**07**
	(b)	Explain Communication system with the help of block diagram	**07**
Q.2	**(a)**	What is modulation? Explain the need of modulation.	**07**
	(b)	Two resistors of 20 K and 50 K are at room temperature of 15 degree Celsius. for a given bandwidth of 10MHz, determine the thermal noise voltage generated by a) two resistors in series b) two resistors in parallel	**07**
		OR	
	(b)	A mixer circuit has a noise figure of 12 dB. It is preceded by an amplifier that has an equivalent noise temperature of 200K and a power gain of 30 dB. Calculate the equivalent noise temperature of combination referred to amplifier input.	**07**
Q.3	**(a)**	Explain the Superhetrodyne receiver with block diagram.	**07**
	(b)	Explain envelop detector for AM demodulation.	**07**
		OR	
Q.3	**(a)**	What is AGC? Explain simple AGC and delayed AGC with proper graph.	**07**
	(b)	Explain Adjacent channel selectivity and image frequency rejection.	**07**
Q.4	**(a)**	Compare AM, FM and PM	**07**
	(b)	List all the properties of Fourier transform. State and prove time Shifting property.	**07**
		OR	
Q.4	**(a)**	Find the Fourier transform of the signal: $x(t) = e^{-at} sin\omega_0 t$	**07**
Q.4	**(b)**	Define Amplitude Modulation. Derive the expression for AM modulated wave.	**07**
Q.5	**(a)**	Give difference between SSB and VSB. Explain filter method with necessary block diagram.	**07**
	(b)	Explain parallel tuned circuit and derive equation for resonant frequency and Q-factor.	**07**
		OR	
Q.5	**(a)**	Explain Series tuned circuit and derive equation for resonant frequency and Q-factor.	**07**
	(b)	Explain phase shift method of SSB generation with necessary block diagram.	**07**