Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VI EXAMINATION – SUMMER 2015

Subject Code: 160802 **Date: 04/05/2015**

Subject Name: Electronic Communication

Time: 10.30am-01.00pm **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 do you mean by "Communication"? Describe in detail Communication system with the help of block-diagram.	**07**
	(b)	State and prove following properties of Fourier Transform 1. Duality 2.Frequency Shifting 3.Convolution in time domain.	**07**
Q.2	**(a)**	Explain the signal to noise ratio [SNR] of an amplifier and effect of amplification on the SNR.	**07**
	(b)	Explain the following: Shot noise, Partition noise, Flicker noise, Burst noise, Avalanche noise, Bipolar transistor Noise, Field effect transistor noise.	**07**
		OR	
	(b)	Draw the circuit diagram of high frequency transformer and derive the equation for transfer impedances.	**07**
Q.3	**(a)**	Draw the AM wave forms for less than 100%, with 100%, more than 100% and with 0% modulation. Assume that the modulating signal is a pure sine wave. And compare the wave forms. How to achieve this?	**07**
	(b)	Explain electronically tuned radio receivers. The carrier amplitude after AM varies between 4 volts and 1 volt. Calculate depth of modulation.	**07**
		OR	
Q.3	**(a)**	Explain operation of an envelope detector circuit. Explain the importance of RC time constants for the envelope detector circuit. Also state and explain various distortions encountered in the envelope detector.	**07**
	(b)	A coil has a series resistance of 10Ω, a self-capacitance of 28 pF and an inductance of 2 μH. Determine the effective inductance and effective Q-factor when coil forms part of series tuned circuits resonant at 12 MHz.	**07**
Q.4	**(a)**	Define and explain energy spectral density (ESD).Obtain the Fourier transform of a unit step function.	**07**
	(b)	Explain: " Skin effect "	**07**
		OR	
Q.4	**(a)**	Write a short note on: A.G.C. (Automatic Gain Control).	**07**
	(b)	A 20 MHz carrier is modulated by a 300 Hz audio sine wave, If the carrier voltage is 5 volt and the maximum deviation is 12 kHz, Write the equation of this modulated wave for :(A) F. M. (B) P.M.	**07**

Q.5	**(a)**	State and explain Kepler's laws in relation to artificial satellites orbiting the earth. Differentiate between geosynchronous and geostationary satellite orbits.	**07**
	(b)	What do you mean by 'tracking' in a super heterodyne receiver? What is "tracking error"? Explain the" three point tracking" in MW band receiver.	**07**

OR

Q.5	**(a)**	What is Transponder? Explain various Transponders.	**07**
	(b)	What do you mean by altitude control? Explain Multiple-access methods with diagram.	**07**

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