Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 160802 **Date: 21-05-2014**

Subject Name: Electronic Communication

Time: 10:30 am - 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)**	Give classification of Electronic Communication System. Also classify based on direction of communication Write a short note on: Historical review of telecommunication.	**07**
	(b)	Explain: " Skin effect "	**04**
	(c)	A coil has a series resistance of 5 Ω, a self capacitance of 7pF, and an inductance of 1µH.Determine the effective inductance and effective Q-factor when the coil forms part of a series tuned resonant at 25MHz.	**03**
Q.2	**(a)**	Explain (with neat diagram) equivalent input noise generators and comparison of BJTs and FETs.	**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)	In the measurement of noise temperature, an avalanche diode source is used; the ENR Being 14 dB .The measured Y factor is 9 dB.Calculate the equivalent noise temperature of the amplifier under test.	**07**
Q.3	**(a)**	State and prove following properties of Fourier Transform 1. Duality 2.Frequency Shifting 3.Convolution in time domain.	**07**
	(b)	Find the Fourier transform of the periodic signal: $x(t)=\cos(2\pi f_o t).u(t)$	**07**
		OR	
Q.3	**(a)**	Explain with block diagram frequency multiplier using PLL and Frequency Synthesizer using PLL.	**07**
	(b)	List the methods used for SSB generation, and explain "Phase Shift method" for generation of L.S.B. with mathematical proof.	**07**
Q.4	**(a)**	Define frequency modulation. What are the advantages and disadvantages of FM as compared to AM?	**07**
	(b)	Find the tuning range necessity for the oscillator capacitor in a MW superheterodyne Receiver which tunes over the range of signals from 530 kHz to 1650 kHz and uses an IF of 455 kHz, if the oscillator frequency is: 1.higher than signal frequency 2.lower than signal frequency	**07**
		OR	
Q.4	**(a)**	Explain the significance of the terms 'sensitivity' and 'selectivity' as applied to a receiver. Which of the receiver stages control these characteristics?	**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**
Q.5	**(a)**	Explain block diagram of double conversion used in communication receivers.	**07**
	(b)	Explain capacitive tap with circuit diagram and find transfer impedance. Explain what is meant by polar mount antenna.	**07**
		OR	
Q.5	**(a)**	Write a short note on : "Geostationary orbit"	**07**
	(b)	Explain Power System with reference to satellite communications.	**07**

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