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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI- EXAMINATION – SUMMER 2016

Subject Code:160802 **Date:21/05/2016**

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)**	Define analog and digital messages. What is the difference between them? Write a short note on: Historical review of telecommunication.	**07**
	(b)	Draw the circuit diagram of high frequency transformer and derive the equation for transfer impedances.	**07**
Q.2	**(a)**	Explain (with neat diagram) equivalent input noise generators and comparison of BJTs and FETs.	**07**
	(b)	Calculate the noise factor of an attenuator pad that has an insertion loss of 6dB.	**07**
		OR	
	(b)	An AM broadcast has an IF of 465 kHz and is tuned to 1000 kHz, and the RF stage has one tuned circuit with a Q of 50.(a)Find the image frequency.(b)Find the image rejection in decibels.	**07**
Q.3	**(a)**	Describe in detail: "FRIIS'S FORMULA".	**07**
	(b)	What are the advantages of single sideband (SSB) modulation over double sideband with suppressed carrier (DSBSC)? Calculate the percent power saving for a DSBSC signal for the modulation percentage of (i) 100 % and (ii) 50 %.	**07**
		OR	
Q.3	**(a)**	Write a short note on: A.G.C. (Automatic Gain Control).	**07**
	(b)	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**
Q.4	**(a)**	State and prove the following properties of Fourier Transform: 1.Scaling 2.Differentiation in time domain 3.Duality Also explain the significance of these properties in communication systems.	**07**
	(b)	The antenna current of an AM broadcast transmitter, modulated to a depth of 40% by an audio sine wave , is 11A.It increases to 12 A as a result of simultaneous modulation by another audio sine wave. What is the modulation index due to this second wave?	**07**
		OR	
Q.4	**(a)**	Requirements of the "RF AMPLIFIER" in the super heterodyne receiver? Without "RF AMPLIFIER" receiver will work?	**07**
	(b)	In an FM system, when the audio frequency is 500Hz and the AF voltage is 2.4 V, the deviation is 4.8 kHz. If the AF voltage is now increased to 7.2 V, what is the new deviation? If the AF voltage is raised to 10 V while the AF is dropped to 200Hz, what is the deviation? Find modulation index in each case.	**07**
Q.5	**(a)**	What do you mean by altitude control? Explain Multiple-access methods with diagram.	**07**
	(b)	Explain block diagram of double conversion used in communication receivers.	**07**
		OR	

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**

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