Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - IVth Semester–Examination – May- 2012

Subject code: X41101

Subject Name: Electronic Communication

Date:08/05/2012 **Time: 02:30 pm – 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)**	Give classification of electronics communication system by every aspects and explain them in short.	**07**
	(b)	What is modulation? Why modulation is required? Describe in detail.	**07**
Q.2	**(a)**	Determine the power content of the carrier and each of the sidebands for an AM siganl having a percent modulation of 80% and a total power of 2500W.	**07**
	(b)	Explain different types of noise related to communication.	**07**
		OR	
	(b)	Discuss Noise factor. Derive expression for noise factor of amplifier connected in cascade.	**07**
Q.3	**(a)**	State and prove any three properties of Fourier transform.	**07**
	(b)	In an FM system, when the audio frequency is 500 Hz and the AF voltage is 2.4 V, the deviation is 4.8KHz. If the AF voltage is now increased to 7.2V, What is the new deviation? If the AF voltage is raised to 10V while the AF is dropped to 200Hz, What is the deviation ? Find the modulation index in each case.	**07**
		OR	
Q.3	**(a)**	Explain series tuned circuit and parallel tuned circuit with details.	**07**
	(b)	In a super-heterodyne receiver having no RF amplifier the loaded Q of the antenna coupling circuit(at the input of the mixer) is 90. If the intermediate frequency is 455KHz. Calculate the following (a) the image frequency and image frequency rejection ratio at 950 KHz and (b) The image frequency and its rejection ratio at 10MHz.	**07**
Q.4	**(a)**	Explain Amplitude Modulation with required waveforms. Also give mathematical representation of Amplitude modulated Wave.	**07**
	(b)	With respect to receivers explain Image rejection and double spotting in detail.	**07**
		OR	
Q.4	**(a)**	What are the complexity remains in SSB ? List the methods of generation of SSB signal and explain any two of them.	**07**
	(b)	Explain AGC and discuss difference between simple AGC and Delayed AGC.	**07**
Q.5	**(a)**	Explain double conversion super-heterodyne receiver with neat diagram.	**07**
	(b)	What is pre-emphasis ? why is it used ? sketch a typical pre-emphasis circuit and explain why de-emphasis must be used also?	**07**
		OR	
Q.5	**(a)**	What do you mean by Tracking? Explain with figures: Padder Tracking, trimmer tracking and Three points tracking.	**07**
	(b)	Explain Armstrong method of FM generation with neat diagram.	**07**

****