Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI EXAMINATION – WINTER 2015

Subject Code:160802 Date:17/12/ 2015

Subject Name: Electronic Communication

Time:2:30pm to 5:00pm 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)**	Draw and Explain the block diagram of communication system.	**07**
	(b)	Discuss various types of noise. Also discuss their sources and solutions.	**07**
Q.2	**(a)**	Define Modulation. Discuss various types of modulations with waveforms.	**07**
	(b)	In an FM system, when the audio frequency is 500Hz, and the AF voltage is 2.4V, 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 further raised to 10V while the AF is dropped to 200Hz, what is the deviation? Find the modulation index in each case.	**07**
		OR	
	(b)	Draw and explain the block diagram of Super heterodyne receiver.	**07**
Q.3	**(a)**	What is skin effect? Explain the cause and solution of it.	**07**
	(b)	The first stage of a two stage amplifier has a voltage gain of 10, a 600Ω input resistor, a 1600Ω equivalent noise resistance and a 27 kΩ output resistor. For the second stage, these values are 25, 81 kΩ,10 kΩ and 1M Ω respectively. Draw the block diagram from the given information and Calculate the equivalent input noise resistance of this two stage amplifier.	**07**
		OR	
Q.3	**(a)**	Explain AGC.	**07**
	(b)	In a broadcast super heterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit (at the input to the mixer) is 100. If the intermediate frequency is 455 kHz, calculate (i) image frequency and its rejection ratio at 1000kHz, and (ii) image frequency and its rejection ratio at 25MHz.	**07**
Q.4	**(a)**	What is the difference between Fourier Series and Fourier Transform. State and Prove the Convolution Property of Fourier Transform.	**07**
	(b)	Obtain the Fourier Transform of single sided real exponential function $e^{-at}u(t)$.	**07**
		OR	
Q.4	**(a)**	Prove that convolution in time domain is equivalent to multiplication in frequency domain.	**07**
	(b)	Draw and Explain Frequency Division Multiplexing.	**07**
Q.5	**(a)**	What is S/N ratio? Derive S/N for tandem connection.	**07**
	(b)	Explain PLL with application.	**07**
		OR	
Q.5	**(a)**	Discuss the methods to generate Frequency Modulation.	**07**
	(b)	Compare AM, FM and PM based on their bandwidth requirement complexity, distortion etc.	**07**

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