Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER 2013

Subject Code: 161704 Date: 03-06-2013

Subject Name: Analog and Digital 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)**	Explain need of modulation in detail	**07**
	(b)	Discus the types, causes and effects of the various forms of the noise which may be created within a receiver or an amplifier.	**07**
Q.2	**(a)**	The antenna current of an AM transmitter is 8 A when only the carrier is sent, but is increases to 8.93A when the carrier is modulated by a single sine wave. (i) Find the percentage modulation. (ii) Determine the antenna current when the percentage of the modulation changes to 0.8.	**07**
	(b)	Derive the formula for the instantaneous value of an FM voltage and define the modulation index. And also draw the waveforms of information signal and its FM modulated signal.	**07**
		OR	
	(b)	What is pre-emphasis why it is used? Sketch a typical pre-emphasis circuit and explain why de-emphasis is used also.	**07**
Q.3	**(a)**	Explain fully the difference between frequency and phase modulation.	**07**
	(b)	For a bit stream 10100111011 draw the waveform in following line coding UNZ,URZ,BNZ-AMI, BRZ-AMI, Manchester(Biphase) and differential Manchester format.	**07**
		OR	
Q.3	**(a)**	List the layers of the OSI model and explain function of each layer in detail.	**07**
	(b)	Determine state of the LRC bits for the asynchronous ASCII message ñGTUò and show error free message produce an LRC of 0 at the receiver. Also illustrate how LRC/VRC is used to correct a bad bit. (G=47H, T=54H and U=55H)	**07**
Q.4	**(a)**	Describe RS232C interface standard and draw its null modem configuration.	**07**
	(b)	What is quantization and quantization error? Find the step size and maximum quantization error for a quantized signal whose peak voltages are +16.8V and -22.4V each samples are coded with 8 bit.	**07**
		OR	
Q.4	**(a)**	What are the main transmit and receive blocks of a FSK modem? Explain the function of each block.	**07**
Q.4	**(b)**	Why companding is used? Explain companding Laws in detail.	**07**
Q.5	**(a)**	Describe bit oriented protocols	**07**
	(b)	Explain IEEE 802.5 Token Ring.	**07**
		OR	
Q.5	**(a)**	Enlist fiber cable losses. And explain it.	**07**
	(b)	What types of multiplexing used in analog and digital cellular phone system? And explain secure cellular transmission.	**07**

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