Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: 141102 **Date: 17-06-2013**

Subject Name: Communication Engineering

Time: 10:30am – 01:00pm **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)** Answer the following questions **07**

[1] What is modulation?

[2] Why modulation is required?

[3] What is noise? List different types of noise

[4] Draw amplitude modulation waveform for modulation index m=1 (100% modulation)

[5] Define modulation index for frequency modulation

[6] Find out total transmitter power if carrier power is 1000 W and modulation index m=0.7 for amplitude modulation.

[7] What is % power saving if AM transmitter is replaced by SSB transmitter with modulation index = 0.5?

(b) Derive equation for AM signal and discuss frequency spectrum of amplitude modulated signal **07**

Q.2 **(a)** Explain generation of SSB signal using filter with help of block diagram. What are the advantages and disadvantages of SSB system with respect to AM system? **07**

(b) Compare amplitude modulation and frequency modulation. Discuss generation of FM signal using indirect method. **07**

OR

(b) Draw and explain stabilized reactance modulator. Discuss problems associated with stabilized reactance modulator. **07**

Q.3 **(a)** Draw and explain block diagram of super heterodyne AM receiver. **07**

(b) Why quality of audio signal is better in FM compared to AM ? Discuss difference between AM receiver and FM receiver. **07**

OR

Q.3 **(a)** Draw and explain AM detector circuit. Discuss diagonal peak clipping and negative peak clipping. **07**

(b) Explain basic principle of SSB detection. Discuss methods used for SSB detection. **07**

Q.4 **(a)** What is sampling? Why sampling is required? Discuss effects of under-sampling and over-sampling. **07**

(b) What is quantization? Why quantization is done? Discuss effects of increasing and decreasing number of quantization levels on quality and bandwidth of the information signal. Discuss importance of non-linear quantization **07**

OR

Q.4 **(a)** Draw and explain block diagram of pulse code modulation system. **07**

	(b)	Why digital signal is not suitable for transmission without modulation? What are the methods for analog transmission of digital signal? Explain amplitude shift keying technique.	**07**
Q.5	**(a)**	Discuss principle of light transmission in fiber optic cable. Discuss losses occurs in fiber optic cable	**07**
	(b)	What is multiplexing? List types of multiplexing techniques. Explain frequency division multiplexing with help of block diagram.	**07**
		OR	
Q.5	**(a)**	Draw and explain block diagram of color television receiver.	**07**
	(b)	List color television standards. Discuss PAL-B standard	**07**

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