Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-IV Remedial Examination Nov/ Dec. 2010

Subject code: 141102 Subject Name: Communication Engineering

Date: 08 / 12 / 2010 Time: 03.00 pm – 05.30 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)**	What is modulation? Discuss need of modulation in communication systems.	**07**
	(b)	What is modulation index? Draw amplitude modulation waveform for modulation index m=0, 0.5 and 1. Derive relation between output power of AM transmitter modulation index.	**07**
Q.2	**(a)**	What is noise? List various sources of noise. Discuss thermal noise.	**07**
	(b)	Discuss generation of SSB using phase shift method with help of block diagram. Give mathematical proof of sideband suppression.	**07**
		OR	
	(b)	AM radio transmitter transmits total power of 10 KW with modulation index 60%. Calculate carrier power. What will be power required if system is replaced by SSB transmitter? Calculate percentage power saving.	**07**
Q.3	**(a)**	Define frequency modulation. Discuss indirect method of FM generation.	**07**
	(b)	Draw block diagram of the FM receiver. Explain function of each block	**07**
		OR	
Q.3	**(a)**	Derive equation of FM signal. Discuss frequency spectrum of FM signal.	**07**
	(b)	Draw and explain block diagram of super-heterodyne AM receiver	**07**
Q.4	**(a)**	Draw and explain block diagram of pulse code modulation system. Explain importance of anti-aliasing filter.	**07**
	(b)	Explain basic concept of telegraphy. Discuss telegraph speed and multiplexing technique used in telegraph to utilize available telephone line bandwidth	**07**
		OR	
Q.4	**(a)**	What is multiplexing? Explain frequency division multiplexing with help of block diagram and frequency spectrum	**07**
	(b)	What is pulse amplitude modulation? Draw waveform of pulse amplitude modulation and explain any one PAM generation circuit.	**07**
Q.5	**(a)**	Draw and explain typical system block diagram of fiber optic communication system. List optical components used to interconnect a digital voice or data using fiber optic system.	**07**
	(b)	Draw and explain basic block diagram of color television receiver	**07**
		OR	
Q.5	**(a)**	Draw and explain composite video signal. Explain each component.	**07**
	(b)	Explain the terms: [1] Reflection [2] Refraction [3] Dispersion [4] Diffraction [5] Absorption [6] Scattering [7] Numerical Aperture (NA)	**07**

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