

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 **0**
- [1] What is modulation? **7**
- [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 **0**
- 7**
- 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? **0**
- 7**
- (b)** Compare amplitude modulation and frequency modulation. Discuss generation of FM signal using indirect method. **0**
- 7**
- OR**
- (b)** Draw and explain stabilized reactance modulator. Discuss problems associated with stabilized reactance modulator. **0**
- 7**
- Q.3 (a)** Draw and explain block diagram of super heterodyne AM receiver. **0**
- 7**
- (b)** Why quality of audio signal is better in FM compared to AM ? Discuss difference between AM receiver and FM receiver. **0**
- 7**
- OR**
- Q.3 (a)** Draw and explain AM detector circuit. Discuss diagonal peak clipping and negative peak clipping. **0**
- 7**
- (b)** Explain basic principle of SSB detection. Discuss methods used for SSB detection. **0**
- 7**
- Q.4 (a)** What is sampling? Why sampling is required? Discuss effects of under-sampling and over-sampling. **0**
- 7**
- (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 **0**
- 7**
- OR**
- Q.4 (a)** Draw and explain block diagram of pulse code modulation system. **0**
- 7**

- (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. **0**
7
- Q.5** (a) Discuss principle of light transmission in fiber optic cable. Discuss losses occurs in fiber optic cable **0**
7
- (b) What is multiplexing? List types of multiplexing techniques. Explain frequency division multiplexing with help of block diagram. **0**
7
- OR**
- Q.5** (a) Draw and explain block diagram of color television receiver. **0**
7
- (b) List color television standards. Discuss PAL-B standard **0**
7
