

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 141102****Subject Name: Communication Engineering****Date: 21 /06 /2010****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) List the advantages of fiber optic Communication. **05**
(b) Compare AM and FM in detail. **05**
(c) What are the advantages and disadvantages of PCM? **04**

- Q.2** (a) Draw the spectrum of Vestigial sideband for the CCIR System-B showing all details of video and audio signals, carriers. **04**
(b) Explain the FDM system for telephone communication with the help of block diagram. **03**
(c) Define the following with respect to fiber optic communication. **07**
(i) Acceptance Angle. (ii) Numerical Aperture.

OR

- (c) Compare S.I. and G.I. Fiber Cables. **07**
- Q.3** (a) Derive expression for practical and theoretical value of modulation index of AM. **05**
(b) Explain SSB generation using phase shifters. **05**
(c) In a radio receiver an RF amplifier and a mixer are connected in cascade. The amplifier has a noise figure of 10dB and the power gain of 15dB. The noise figure of the mixer stage is 20dB. Calculate the overall noise figure referred to the input. **04**

OR

- Q.3** (a) Derive the Friis formula for overall noise factor of amplifiers in cascade. **05**
(b) Explain Demodulation of AM using envelope detector. How RC time constant is important here and should be chosen? **05**
(c) What is max. frequency deviation in FM System when modulating frequency is 400 Hz and the modulation voltage is 2.4 volt. What will be the modulation index if the modulating frequency is reduced to 250 Hz and the modulating voltage is simultaneously raised to 3.2 volt. **04**

- Q.4** (a) "FM is a constant Bandwidth system." Justify. **07**
(b) What do you mean by image frequency? Explain any one method for its rejection. **07**

OR

- Q.4** (a) Describe the principle and operation of phase discriminator (Foster Seeley discriminator) with neat sketch. **07**
(b) Compare PAM, PWM and PPM in detail. **07**

- Q.5 (a)** Draw and explain the block diagram of fiber optic communication system. **05**
Explain the function of each block.
- (b)** Draw and explain each details of composite video signal. **05**
- (c)** Briefly describe with respect to long haul systems.(i) Station Keeping (ii) Multispot Beams. **04**
- OR**
- Q.5 (a)** Describe basic structure of fiber optic cable.Compare single mode and multi mode fibers. **05**
- (b)** Compare CCIR-B and PAL TV Standards. **05**
- (c)** Compare the characteristics of Terrestrial microwave links and Tropospheric Scatter links. **04**
