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Total Number of Pages: 02

**B.Tech**  
**PCEE4304**

**6<sup>th</sup> Semester Regular / Back Examination 2015-16**  
**COMMUNICATION ENGINEERING**

**BRANCH: CSE, IT, ITE**

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE: W576**

**Answer Question No.1 which is compulsory and any five from the rest.**  
**The figures in the right hand margin indicate marks.**

**Q1** Answer the following questions: (2 x 10)

- Differentiate between correlation and convolution.
- What is the need for modulation in communication system?
- In an AM system, a 10 V carrier signal is amplitude modulated by three different signals having amplitude of 1 V, 2 V and 5 V respectively. Find the modulation index of the system.
- What is the condition for over modulation in AM system and how the over modulated signals can be recovered in AM system?
- What do you mean by Fidelity and Sensitivity of a receiver?
- Two signals bandlimited to 3 KHz and 5 KHz are to be time division multiplexed. Find the maximum permissible interval between two successive samples.
- Why is the Intermediate Frequency set at 455 KHz in a commercial AM receiver?
- Differentiate between Crosstalk and Inter Symbol Interference?
- A communication channel with Additive White Gaussian Noise, has a bandwidth of 6 KHz and SNR of 1.5. Find the channel capacity?
- What is Line code? Mention two important properties of Line code.

**Q2 a)** Explain the generation of Frequency modulated signal using Armstrong method. (5)

**b)** Describe the relation between FM and PM. (5)

**Q3 a)** With the help of proper diagram, explain the generation of Delta Modulated signal and derive the expression for SNR. (5)

**b)** Explain the operation of VSB transmission. (5)

**Q4** Draw and explain the Envelop detection method for demodulation of AM signal. (10)

What is Diagonal clipping in this process?

Derive a condition for obtaining an optimum value of time constant of the demodulator circuit to avoid Diagonal clipping.

- Q5 a)** Mention the different sources of noise in communication system. What is the significance of White Gaussian Noise in communication system? **(5)**
- b)** The noise figure and the power gain of the individual stage of a three-stage cascaded amplifier are 10 dB and 20 dB respectively. Evaluate the overall noise figure of the cascaded amplifier. **(5)**
- Q6 a)** What is quantization noise in PCM? Derive the expression for quantization noise in PCM system. **(5)**
- b)** What is T1 Digital Carrier system? Find the transmission bit rate for this type of system. **(5)**
- Q7 a)** Explain the operation of Super Heterodyne Receiver using proper block diagram. **(5)**
- b)** Explain why a non-uniform quantization is used in practical PCM system rather than a uniform quantization? What are the different schemes adopted for non-uniform quantization? **(5)**
- Q8** Write short notes on any two: **(5 x 2)**
- Differentiate between Synchronous and Asynchronous TDM.
  - Advantages of FM over AM.
  - Use of PLL in FM demodulation.
  - Eye Pattern