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**Total No. of Questions : 09**

**B.Tech.(ECE) (2012 to 2017) (Sem.-5)**

**B.Tech. (Electronics & Telecom Engg.)**

# DIGITAL COMMUNICATION SYSTEM

**Subject Code : BTEC-501**

**M.Code : 70545**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTION TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt ANY FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students has to attempt ANY TWO questions.**

## SECTION-A

1. **Write briefly :**
  - a. Define Non-Linear Quantization.
  - b. What are the advantages of Delta modulation?
  - c. Describe the difference between uniform and non-uniform companding.
  - d. Explain the Nyquist criterion for distortion less base band binary transmission.
  - e. Differentiate between unipolar and bipolar signaling.
  - f. Calculate the bit rate in  $T_1$  digital system when number of channels are 32.
  - g. What are the sampling rates of the following signals : voice at 15 KHz, at high fidelity music at 20 KHz ?
  - h. Why clock recovery is required in the BPSK demodulation circuit?
  - i. What is the band limited signal?
  - j. State the disadvantages of DPSK and PSK.

### SECTION-B

2. Compare and analog communication system.
3. What is the purpose of Clock recovery circuit? When it is used?
4. Explain the coherent and non-coherent FSK detectors.
5. Determine the signal to quantization noise ratio of a delta modulate with a bit rate of 64 kb/s and an input signal bandwidth of 4KHz.
6. How the use of eye patterns are useful for studying the ISI in digital communication system?

### SECTION-C

7. Explain the Quadrature phase Shift Keying way of digital modulation in detail. Derive all the mathematic equations to support your answer.
8. A Gaussian channel is having a band width of 1MHz. Calculate the channel capacity if the signal power to noise spectral density is 105 Hz. Also find the maximum information rate.
9. Explain the working of adaptive delta modulation with suitable diagrams. Also compare this with other modulation schemes.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**