C.U.SHAH UNIVERSITY
Summer Examination-2016

Subject Name: Digital Communication

Subject Code: 4TE06DCM1   **Branch: B.Tech(EC)**

Semester: 6   **Date:06/05/2016**   **Time: 2:30 To 5:30**   **Marks :70**

Instructions:
  (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  (2) Instructions written on main answer book are strictly to be obeyed.
  (3) Draw neat diagrams and figures (if necessary) at right places.
  (4) Assume suitable data if needed.

Q-1   **Define the following terms:**   **(14)**
  a) Channel Capacity.
  b) Channel Bandwidth.
  c) Space Division Multiplexing.
  d) Line Coding.
  e) Pulse Shaping.
  f) Interpolation Process.
  g) Pulse Width Modulation.
  h) Pulse Position Modulation.
  i) Uniform Quantization.
  j) Non-Uniform Quantization.
  k) Companding.
  l) Polar NRZ.
  m) Split Phase Manchester.
  n) AMI NRZ.

Attempt any four questions from Q-2 to Q-8

Q-2   **Attempt all questions**   **(14)**
  (a) Explain Channel identification methods of TDM
  (b) Explain the advantages of digital communication

Q-3   **Attempt all questions**   **(14)**
  (a) Explain frequency division multiplexing
  (b) State, prove and explain the sampling theorem. What is aliasing effect?

Q-4   **Attempt all questions**   **(14)**
  (a) Explain working principle of delta modulation with help of block diagram. What are the problems associated with delta modulation?

(b) Explain the method of quantization and derive the expression of the quantization error.

Q-5   **Attempt all questions**   **(14)**
(a) What is Inter Symbol Interference? Explain the Nyquist's first criteria for zero ISI.
(b) What is scrambling? Explain scrambling and unscrambling process with block diagram and example.

Q-6   **Attempt all questions**   **(14)**
(a) Write a note on Eye Diagram.
(b) Explain mathematical and graphical representation of BPSK. Explain BPSK generation.

Q-7   **Attempt all questions**   **(14)**
(a) Explain Quadrature Phase Shift Keying (QPSK) technique with neat sketches. Draw signal space diagram for QPSK.
(b) Explain the roles of Modems

Q-8   **Attempt all questions**   **(14)**
(a) Write short note on RS-232 signals.
(b) Draw and explain the schematic diagram of acoustic coupling modem.