Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Digital Communication

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

Semester: 6 Date: 23/04/2018 Time: 02:30 To 05:30 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) Guard band.
b) Nyquist Rate.
c) Inter Symbol Interference.
d) Granular Noise.
e) Uniform Quantization.
f) Companding.
g) PWM.
h) PPM.
i) Polar NRZ.
j) Split Phase Manchester.
k) AMI NRZ.
l) Pulse Shaping.
m) Interpolation Process.
n) Multiplexing.

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

Q-2 **Attempt all questions** **(14)**

(a) What is time division multiplexing? What is the concept behind it? What are the advantages and disadvantages of it?
(b) Explain frequency division multiplexing in detail.

Q-3 **Attempt all questions** **(14)**

(a) Explain the Advantages of digital communication over the analog communication in detail.
(b) Define and explain sampling theorem in detail.

Q-4 **Attempt all questions** **(14)**

(a) Explain with the help of suitable block diagram the Pulse Width Modulation scheme.

(b) Derive the formula for signal to quantization noise ratio for PCM.

Q-5 **Attempt all questions** **(14)**

(a) What is companding process in PCM? State laws for the same.

(b) Explain working principle of Adaptive delta modulation with help of block diagram. What are the advantages ADM over DM?

Q-6 **Attempt all questions** **(14)**

(a) What is scrambling? Explain scrambling and unscrambling process with block diagram and example.

(b) What is line coding? What are the ideal requirements from line coding? Draw waveform of bipolar AMI coding for the sequence 10100101.

Q-7 **Attempt all questions** **(14)**

(a) Explain mathematical and graphical representation of BPSK. Explain BPSK generation.

(b) Explain the principle of Quadrature Amplitude Shift Keying (QASK) transmitter.

Q-8 **Attempt all questions** **(14)**

(a) Write short note on RS-232 signals.

(b) Explain the role of Modems in detail.