Roll No. .....

National Institute of Delhi

B.Tech (ECE), 5th Semester

Subject: Digital Communication **Time:** 2 Hrs

Sub Code: ECB-303 **Max. Marks:** 25

Note: Attempt all the questions.

Q.1

(a) List at least five desirable properties of digital waveforms.

(b) The signal $x(t) = \cos 5\pi t + \cos 10\pi t$ is instantaneously sampled. The interval between two samples is T_s.
(i) Find the maximum allowable value of T_S.
(ii) To reconstruct the signal, $x_\delta(t)$ is passed through a LPF. Find the minimum filter BW.

(c) Explain the significance of Companding process. How it is implemented?

(d) Differentiate between Bit rate and Baud rate.

(e) The bit sequence 1011101011 is to be transmitted. Draw the waveforms for following formats.
(i) Unipolar RZ and NRZ
(ii) Split phase Manchester
(iii) Polar Quaternary NRZ (5*3=15)

Q.2 Explain the working of Binary FSK transmitter and receiver in detail. (5)

Q.3 Derive an expression for signal to quantization noise ratio of DM system taking $m(t)=A \cos \omega_m t$. (5)