



(Pages : 2)

A – 2862

Reg. No. :

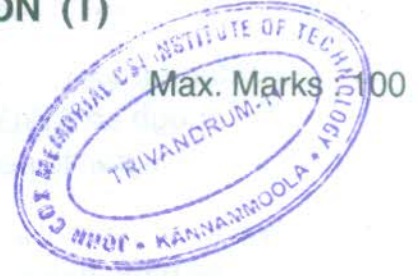
Name :

**Sixth Semester B.Tech. Degree Examination, May 2016
(2008 Scheme)**

08.604 : DIGITAL COMMUNICATION (T)

Time : 3 Hours

PART – A



Answer **all** questions. **Each** question carries **4** marks :

1. Derive the expression for Signal to Quantization Noise ratio of a uniform quantizer.
2. In a Delta Modulation (DM) system, if the sampling frequency is doubled without changing the step size, what changes occurs on the slope overload error and granular noise ?
3. Determine the impulse response of a filter matched to the signal $\phi(t) = \cos(2\pi f_c t)$ $0 \leq t \leq T$ and $\phi(t) = 0$ elsewhere, where f_c is an integer multiple of $\frac{1}{T}$. Also determine the matched filter output for this input.
4. Explain the formats used for signal representation in PAM.
5. Define inner product of two vectors. State the conditions for an operator to become an inner product.
6. Why DPSK is called non-coherent BPSK ?
7. Compare the performance of BPSK, QPSK and FSK with respect to probability of error and band-width requirement.
8. Why we prefer spread spectrum modulation for communication over wireless channel ?
9. Explain the characteristics of Rayleigh fading channel.
10. Compare CDMA and TDMA.

(10×4=40 Marks)

P.T.O.



PART - B

Answer **any 2** questions from **each** Module. **Each** question carries **10** marks :

Module - I

11. Explain ADPCM encoding scheme. 10
12. Consider the transmission of base band messages with symbols $s_1(t)$, $s_2(t)$, ... $s_m(t)$ through an AWGN channel. Show that matched filter receiver maximizes the output signal to noise ratio for the detection of the above signal. 10
13. Define inter symbol interference. Derive the Nyquist's criterion for distortion less base band binary transmission. 10

Module - II

14. Consider a set of M vectors in R^N . How will you convert it into an orthogonal set ? 10
15. Derive the expression for the probability error for coherent BPSK system. 10
16. a) Explain the signal detection method for non-coherent FSK system. 5
b) Show that correlator receiver implements a maximum likelihood detection. 5

Module - III

17. What is Pseudo-Noise (PN) Sequence ? How it is generated ? Define maximum length sequence and state its properties. 10
18. Explain the working of Direct sequence spread spectrum generator and Demodulator. 10
19. Explain how the RAKE receiver used in CDMA systems integrates multipath components to get efficient output. 10

(6×10=60 Marks)