Reg. No. : | | | | | | | | | | |

Question Paper Code: 52213

M.E. DEGREE EXAMINATION, NOV 2016

First Semester

COMMUNICATION SYSTEMS

15PCM103 - MODULATION AND CODING TECHNIQUES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 3 = 15 Marks)

1. Draw the state and trellis diagram for NRZI code.
2. Define training mode in an adaptive equalizer.
3. State Information capacity theorem.
4. How to achieve the coding gain by TCM?
5. When does a MAP detector become ML detector?

PART - B (5 x 14 = 70 Marks)

6. (a) Derive the power spectral density of linear modulated signals with memory. (14)

Or

(b) Determine the power spectral density of CPFSK modulated signal. (14)

7. (a) What is a transversal equalizer? Explain how can it be implemented. (14)

Or

(b) Discuss the convergence properties of LMS algorithm and excess MSE due to noisy gradient estimates in LMS algorithm. (14)

8. (a) Write short notes on modulation constrained information rate. (14)

Or

(b) Discuss in detail about constellation-constrained AWGN channel. (14)

9. (a) Illustrate set partitioning of four-state trellis-coded modulation with 8-PSK signal constellation. (14)

Or

(b) Discuss in detail about trellis coded modulation with suitable example. (14)

10. (a) Derive mathematical description of the Max-Log-MAP algorithm. (14)

Or

(b) Explain Iterative turbo coding principles with suitable example. (14)

PART - C (1 x 15 = 15 Marks)

11. (a) Derive the basic formula for capacity of the band limited AWGN waveform channel with a band limited and average power limited input. (15)

Or

(b) Explain with derivation the modifications of MAP algorithm. (15)

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