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Question Paper Code: 51Q03

M.E. DEGREE EXAMINATION, APRIL 2019

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)

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|----|--------------------------------------|-------|
| 1. | What is multi-h CPM? | CO1-U |
| 2. | Compare LMS & RLS algorithm. | CO2-U |
| 3. | Define Noisy channel coding theorem. | CO3-U |
| 4. | Define free Euclidean distance. | CO4-U |
| 5. | What is RSC encoding? | CO5-U |

PART -B (5 x 14= 70 Marks)

6. (a) Derive the power spectral density of Linearly modulated signals. CO1- App (14)

Or

- (b) Determine the power spectral density of CPFSK modulated signal. CO1- App (14)

7. (a) Derive the minimum mean squared error for zero forcing decision feedback equalizer (DFE-ZF). CO2- U (14)

Or

- (b) Derive the weight vector update equation of the LMS algorithm for Linear equalizer. CO2-U (14)

8. (a) Discuss in detail about Constellation-constrained AWGN channel. CO3- U (14)
- Or
- (b) Write short notes on modulation constrained information rate. CO3- U (14)
9. (a) Illustrate set partitioning of Four –state Trellis-coded modulation with 8-PSK signal constellation. CO4 -U (14)
- Or
- (b) Discuss in detail about trellis coded modulation with suitable example. CO4- App (14)
10. (a) Explain Iterative turbo coding principles with suitable example. CO5- Ana (14)
- Or
- (b) Evaluate using mathematical description of the Soft output Viterbi algorithm (SOVA) along with its implementation. CO5- Ana (14)

PART - C (1 x 15 = 15 Marks)

11. (a) Discuss in detail about Constellation-constrained AWGN channel. CO3- U (15)
- Or
- (b) What is set partitioning concept? Using suitable example explain the concept with respect to Trellis coded modulation. CO4- U (15)
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