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Code No. : 5133

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD

M.E. (ECE: CBCS) I-Semester Main Examinations, Jan./Feb.-2017

(Communication Engineering & Signal Processing)

Advance Digital Modulation Techniques

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Summarize the parameters used for the performance evaluation of digital modulation techniques.
2. Outline the advantages of digital communication system.
3. In M-ary PSK, compare error performance with increase in M value.
4. Differentiate between QPSK and MSK.
5. Name the impairments that affect the transmitted signal through AWGN channel.
6. Brief maximum likelihood criterion used for optimum detection.
7. Enlist the applications of spread spectrum communication.
8. Define the term Processing Gain.
9. Discuss the suitability of space time codes for MIMO communications.
10. Describe about SDMA.

Part-B (5 × 10 = 50 Marks)

11. a) Describe the working of Matched filter demodulator. List the important properties of Matched filter. [6]
b) Compare basic digital modulation techniques. [4]
12. a) Explain the working principle of GMSK modulation technique. Why is it preferred for mobile communications? [5]
b) Explain about the performance of binary FSIC in M-ary PSK under Gaussian noise conditions. [5]
13. a) Write about different equalization techniques. [5]
b) Categorize the different ways to achieve timing synchronization. [5]
14. a) With necessary mathematical analysis and diagrams explain the working of FHSS system. [6]
b) Describe how code acquisition and tracking is established in DS-SS systems. [4]
15. a) Explain the operation of RAKE demodulator under fading channel conditions. [5]
b) Discuss the statistical modelling of multipath fading communication channels. [5]
16. a) List and explain the important concepts to achieve reliable digital communication. [4]
b) Draw & describe the error performance of QPSK in the presence of AWG Noise. [6]
17. Answer any *two* of the following:
 - a) OFDM [5]
 - b) FEC coding for CDMA [5]
 - c) Smart antennas. [5]

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