Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

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M.Tech. ECE (Wireless Communication) (2018 Batch) (Sem.–1)

INFORMATION THEORY AND CODING

Subject Code : MTWC-102-18

M.Code : 75798

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. a) Define :

   i) Self-information

   ii) Rate of source

   iii) Entropy of source with an example.

   b) What is Markoff information source? What is the use of the tree diagram representation for such a source? Define the terms Entropy and information rate of Markoff sources.

2. a) Differentiate adaptive Huffman coding and Arithmetic coding.

   b) Explain in brief linear predictive coding.

3. a) Explain prefix coding and decision tree with examples.

   b) Derive an equation for the capacity 'c' of a channel of bandwidth B Hz effected by additive white Gaussian noise of power spectral density of $N_0/2$.

4. a) Explain the error correction procedure for cyclic codes.

   b) Define hamming weight, hamming distance, and minimum distance for linear block codes.

5. a) If C is valid code vector, then prove that $CH^T = 0$, where, H^T is transpose of parity check matrix H.

   b) What are the binary cyclic codes? Describe the features of encoder and decoder used for cyclic code using (n-K) bit shift register.

6. a) What are different methods of controlling errors? Explain.

   b) What are convolution codes? How is it different from block codes?

7. a) Explain Trellis diagram with suitable example.

   b) Explain the principle of Turbo coding.

8. Write short note on :

   a) Shortened cyclic codes

   b) Golay codes

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.