Roll No .....

MCSE - 202

M.E./M.Tech., II Semester

Examination, July 2015

Information Theory, Coding and Cryptography

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any two parts from each question.
ii) All questions carry equal marks.

1. a) State and discuss Shannon's theorem.
   b) Discuss the Cumulative Gaussian probability.
   c) Consider the random process
   $V(t) = \cos(\omega_0 t + \theta)$
   Where θ is a random variable with a probability density
   $$f(\theta)=\frac{1}{2\pi},\ -\pi \le \theta \le \pi$$
   Show that the first and second moments of $V(t)$ are independent of time.

2. a) Explain concept of discrete-time birth and death process.
   b) Discuss Hidden-Markov model. What are its properties? List its applications.
   c) Differentiate between Poisson process and Bernoulli process.

3. a) What are cyclic codes? Discuss its properties.
   b) Discuss the properties of BCH codes.
   c) Explain optimal linear codes.

4. Write short note on any two :
   a) Cryptanalysis
   b) Encryption Techniques
   c) RSA algorithm

5. a) What is viterbi algorithm of MLSE? Discuss its applications in communication.
   b) Discuss the coding and decoding of LDPC codes.
   c) Explain the decoding and encoding of convolution codes.

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