Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MCSE-202

M.E./M.Tech. II Semester

Examination, June 2016

Information Theory Coding and Cryptography

Time : Three Hours

Maximum Marks: 70

Note: i) Answer any five questions.

ii) All questions carry equal marks.

1. Consider a source with M = 3 and symbol probabilities of 0.5, 0.4 and 0.1. Obtain the Shannon Fano code and calculate its efficiency.

2. A discrete memoryless source has an alphabet of seven symbols whose probabilities of occurrence are as described, here:

Symbol	Probability
A	0.25
B	0.25
C	0.125
D	0.125
E	0.125
F	0.0625
G	0.0625

Compute Huffman code for the source by placing a combined symbol as high as possible.

3. In a finite Markov chain, show that not all states are transient or null recurrent.

4. a) Show that a Markov chain is completely determined by the one step transition probability matrix and initial probability vector.

   b) Show that in an irreducible Markov Chain, all states are either recurrent or all are transient.

5. Construct the generator polynomial for triple error correcting (15, 5) BCH binary code over GF (2^4).

6. What are Binary Cyclic code? Give their characteristic and method of construction.

7. Describe RSA algorithm. What attacks are possible in the RSA algorithm?

8. What is the role of the key in the DES (data encryption standard)? What are the three modes supported by the DES? Where is each a good choice?

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