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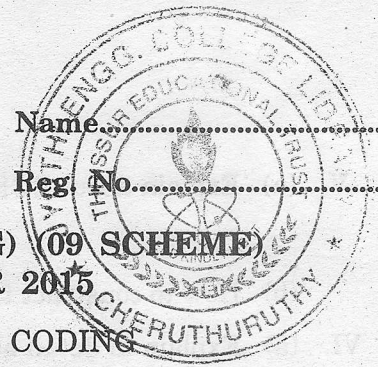
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Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) (09 SCHEME)
DEGREE EXAMINATION, NOVEMBER 2015

CS 09 706 L14—INFORMATION THEORY AND CODING



Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

- I. (a) Describe a discrete memory less channel.
(b) Define prefix property.
(c) What is meant by hamming distance ?
(d) What is the use of Huffman coding ?
(e) State the properties of syndrome.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

- II. (a) Write the channel capacity theorem.
(b) Describe the entropy for a binary symmetric source.
(c) State the properties of syndrome.
(d) What is the binary field arithmetic ?
(e) Describe the properties of Huffman coding.
(f) List the advantages of trellis.

(4 × 5 = 20 marks)

Part C

Answer all questions.

- III. (a) Determine the encoded message for the following 8-bit data codes using the CRC generating polynomial $g(x) = x^2 + x^3 + x^0$.
(a) 11001100 ;
(b) 01011111.

Or

- (b) Consider a (7, 4) cyclic code with generator polynomial $g(x) = 1 + x + x^3$. Let data $d = (1010)$. Find the corresponding systematic code word.

- IV. (a) Explain the error correction and error detection capabilities in detail.

Or

- (b) Discuss about linear block codes with examples.

Turn over

V. (a) Explain about BCH codes with examples.

Or

(b) How to construct the galois field with example ?

VI. (a) Explain in detail about convolution codes with an example.

Or

(b) Explain briefly about Viterbi decoding with diagrams.

(4 × 10 = 40 marks)