C 44420 (Pages : 2) Name.....

Reg. No.....

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THIRUVANANTHAPURAM EDUCATIONAL TRUST
CHERUTHURUTHY

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2013

EC 09 701—INFORMATION THEORY AND CODING

(2009 Scheme – Supplementary)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

I. (a) State the advantage of variable length coding of sources.

(b) Define entropy of a source.

(c) What is a group ? Give an example.

(d) Define hamming weight. What is its significance ?

(e) Define rate efficiency of a convolutional codes.

(5 × 2 = 10 marks)

Part B

Answer **six** *questions.*

II. (a) State and prove two properties of entropy.

(b) Demonstrate Shannon Fano coding with an example.

(c) Write notes on Reed Solomon codes.

(d) Discuss on the conditions for a polynomial to be a generator polynomial.

(e) Explain sequential decoding of a convolutional coded message.

(f) Write notes on Turbo codes.

(6 × 5 = 30 marks)

Part C

Answer any **three** *questions.*

III. (a) State and prove source coding theorem.

Or

(b) Explain the properties of mutual information.

IV. (a) Explain the construction and properties of Galois field.

Or

(b) Explain the coding and decoding techniques used in BCH codes.

Turn over

V. (a) Explain the working of a cyclic encoder using an example.

Or

(b) Explain a decoding technique of linear block codes, taking a suitable example.

VI. (a) Explain viterbi algorithm of decoding convolutional coded words, assuming a convolutional codes and a received vector.

Or

(b) (i) Write notes on interleaved convolutional codes.

(ii) Explain the error detecting and correcting capabilities of Trellis codes.

(3 × 10 = 30 marks)