Code: **ECMC1T6B**

I M.Tech - I Semester - Regular Examinations – February 2016

CODING THEORY & PRACTICE
(MICROWAVE & COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1. a) Explain Huffman coding with example.   7 M

   b) Explain the channel capacity of discrete channel.   7 M

2. a) Explain in detail various error control codes.   7 M

   b) Give the characterization of error control codes.   7 M

3. a) Explain linear convolution encoders. The rate ½ encoder is used to encode the information sequence x=[1 0 1 1 0], obtain the coded output sequences.   7 M

   b) Explain Trellis diagrams with suitable examples.   7 M

4. a) Explain the properties of linear block codes.   7 M

b) Consider the binary codes C composed of the following four code words C={(00100),(10010),(01001),(11111)}
   (i) What is the minimum distance of this code.
   (ii) What is the maximum weight for which the detection of all error patterns is guaranteed?
   (iii) What is the maximum weight for which the correction of all error patterns is guaranteed.   7 M

5.a) Explain the concept of groups , fields and vector spaces.7 M

   b) Explain Euclidean domains and Euclid's algorithm.   7 M

6.a) Explain the properties of linear cyclic codes.   7 M

   b) Explain with diagrams shift register encoders and decoders for cyclic codes.   7 M

7. a) Explain frequency domain approach to BCH and RS codes.   7 M

   b) Explain Petersons decoding algorithm for BCH code.   7 M

8. a) Explain concatenated coded system.   7 M

   b) Explain the codes for magnetic disk storage.   7 M