Roll No…….. **Total No. of Printed Pages: 1**
Total No. of Questions: [09]

B. Tech ECE (Minor Engg.) (Semester – 7th)
ELECTRONIC COMMUNICATION SYSTEM
Subject Code: BECEM1003
Paper ID: [ME111303]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:
   a. Write the advantages of Delta Modulation over PCM.
   b. What is the modulation index in AM, and how is it defined?
   c. Define correlation receiver.
   d. What is channel capacity in the context of the Channel Coding Theorem?
   e. Define hamming distance and its role in error correction.
   f. Define Superheterodyne receiver and give a brief on its characteristics.
   g. How are symbols arranged in Shannon-Fano coding?
   h. Define entropy and its applications.
   i. What is a parity-check matrix in block codes?
   j. Define and classify pulse modulation.

Section – B **(5 marks each)**

Q2. Explain the working of FM demodulator contains phase lock loop with the help of suitable block diagram.
Q3. Explain coherent and non-coherent Ask detector in detail.
Q4. Compare narrowband FM with wideband FM w.r.t following points:
   (a) Modulation index
   (b) Maximum deviation
   (c) Range of modulating frequency
   (d) Application
Q5. Explain DPCM transmitter and receiver in detail.
Q6. Why do we prefer ADM instead of DM? How Slope over load distortion and Granular noise are avoided in ADM?

Section – C **(10 marks each)**

Q7. Construct the Huffman code with minimum code variance for the following probabilities and also determine the code variance and code efficiency:
   {0.25, 0.25, 0.125, 0.125, 0.125, 0.625, 0.625}
Q8. (a) Discuss the principle of FM generation using direct method. State merits and demerits of this method.
   (b) What are the limitaions of Amplitude modulation?
Q9. (a) Explain the structure and working of linear block codes with an example.
   (b) Compare convolutional codes and block codes in terms of structure, encoding and error Correction.