Roll. No………………………   1211104

M.Tech (ECE) 1ˢᵗ Semester Examination

Dec.2012 – Jan.2013

DIGITAL COMMUNICATION TECHNIQUES

Subject Code: ECL 505

Time Allowed: 03 hours.   Maximum Marks: 100
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Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.
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Note: Attempt any five questions and all questions carry equal marks.

Section – A

1 (a) What are the properties of a signal? Compare analog signal with digital signal.   [10]

(b) Classify channels. Explain the model of any two communication channels.   [10]

2 (a) Explain the block diagram of digital communication system.   [10]

(b) Consider the vectors {(1, 1, 0), (1, 0, 1), (0, 1, 1), (1, 1, 1)}   [10]

i) Why can these vectors not be linearly independent?
ii) Carry out the Gram-Schmidt process.

3 (a) State and explain with relevant waveforms Pulse code modulation.   [10]

(b) Explain DPCM with neat diagrams for transmitter and receiver with mathematical models.   [10]

Section – B

4 (a) Derive the bit error probability due to coherent ASK,PSK and FSK systems. Compare the performance of these systems.   [10]

(b) Discuss QPSK signaling. Compare the performance of QPSK receiver with that of PSK receiver.   [10]

5 (a) Define linear block codes .Find the (7, 4) linear systematic block code word corresponding to 1101.Assume a suitable generator matrix.   [10]

(b) Assume a (2, 1) convolutional coder with constraint length 6. Draw the tree diagram, state diagram and trellis diagram for the assumed coder.   [10]

6. Give a detailed note on Communication networks.   [20]