

SHRI SANT GADGE BABA COLLEGE OF ENGINEERING & TECHNOLOGY,
BHUSAWAL

Department of Electronics & Communication Engineering

Class: TE (E&C)
Semester: Second

Subject: ITCT
Session: 2012-13

Assignment-I

Q: 1. Enumerate interpretations of different entropies of two port communication system. Prove that

$$H(X, Y) = H(X/Y) + H(Y)$$

Q: 2. Define mutual information, self information & conditional self information. Prove that mutual

information is given by $H(X : Y) = H(X) + H(Y) - H(X, Y)$

Q: 3. State and prove,

i) Kraft Inequality condition.

ii) Source coding theorem.

Q: 4. Derive the expression for information capacity of colored noise channel.

Q: 5. Derive the equation for channel capacity for additive white Gaussian noise channel in terms of

bandwidth & S/N ratio.

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Assignment-II

Q: 1. Explain the following:

- i) Features of Golay code?
- ii) Method of generating systematic and non systematic code.

Q: 2. Write a short note on.

- i) CRC Codes.
- ii) Golay codes.

Q: 3. What is generator polynomial? Why it should be factor of $X^n + 1$?

Q: 4. What is ARQ? With a neat sketch explain various types of ARQ.

Q: 5. i) What is meant by burst? How burst error corrections take place? Explain with suitable example.

- ii) Explain syndrome decoding technique for error correction and detection.

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Assignment-III

- Q: 1.** Explain TCM encoding and TCM decoding.
- Q: 2.** Explain in detail performance evolution for a TCM scheme design for an AWGN channel.
- Q: 3.** What are Ungerboeck's TCM design rules? Explain asymptotic coding gain.
- Q: 4.** Explain turbo encoder and decoding along with iterative decoding procedure.
- Q: 5.** With reference to convolutional codes explain the following
- i) State diagram.
 - ii) Code tree diagram.
 - iii) Code trellis diagram.

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Assignment-IV

Q: 1. Explain data compression through following

- i) Entropy Encoding & Statistical Encoding.
- ii) Source Encoding.

Q: 2. Write a short note on.

- i) BCH Codes.
- ii) RS codes.

Q: 3. Explain the implementation of Reed Solomon Encoders & Decoders.

Q: 4. What is cryptography? Explain the features of JPEG format.

Q: 5. What is data encryption? What are its standards? Explain key schedule calculation by flow chart.

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Assignment-V

- Q: 1.** What is diversity concept? Draw & explain the block diagram of space diversity technique. Give the type of diversity techniques.
- Q: 2.** Compare TDMA, FDMA, CDMA, SDMA Multiplexing access techniques.
- Q: 3.** What is meant by satellite system power budget with a neat sketch explain uplink power budget in details.
- Q: 4.** Draw & explain the transmitter & receiver arrangements for typical digital satellite communication terminals.
- Q: 5.** Explain the following terms related to mobile communication.
- i) Cell.
 - ii) Clusters.
 - iii) Frequency reuse.
 - iv) Cell splitting.
 - v) Hand over.