

R09

Code No: C9308

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I - Semester Examinations March/April-2011

BIOMEDICAL SIGNAL PROCESSING

(SYSTEMS & SIGNAL PROCESSING)

Time: 3hours

Max.Marks:60

**Answer any five questions
All questions carry equal marks**

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1. (a) Discuss with suitable mathematical expressions for the gaussian density function.
(b) Explain the correlation between random variables with suitable examples. [6+6]
2. (a) Describe the noise bandwidth and noise figure for systems with suitable examples.
(b) With suitable mathematical expressions explain the noise power spectral density analysis. [6+6]
3. (a) With a suitable example discuss on the lossy and lossless data reduction algorithms.
(b) Explain the steps involved in ECG data compression using CORTES technique with neat diagrams. [6+6]
4. (a) Describe the vectors quantization technique for ECG data compression and compare its advantages over other techniques.
(b) Explain the Huffman coding and its uses for ECG data compression. [6+6]
5. (a) Discuss the power spectral analysis techniques and its implementation for heart rate variability signals.
(b) Describe heart rate variability signal using AR modeling. [6+6]
6. (a) Derive the adaptive noise cancellation with LMS adaptation algorithm.
(b) Explain in detail on the principles of adaptive noise canceling. [6+6]
7. (a) Discuss with suitable derivation on original prony's method and its advantages.
(b) Derive the prony's method based on least squares estimate. [6+6]
8. (a) With suitable figures describe the AR modeling of seizure EEG.
(b) Explain the steps involved in sleep stage analysis. [6+6]
