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]

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