R09

Code No: C4503
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations March/April-2011
BIOMEDICAL SIGNAL PROCESSING
(SYSTEMS AND SIGNAL PROCESSING)

Time: 3hours   **Max.Marks:60**
Answer any five questions
All questions carry equal marks
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1. (a) Explain the probability density functions with suitable mathematical expressions.
   (b) Derive any two properties of density functions with suitable examples.
   [12]

2. (a) Discuss the concept of random process and its classification.
   (b) Explain the properties of auto correlation function of random processes with suitable mathematical expressions.   [12]

3. (a) Explain in detail on the AZTEC algorithm for ECG data compression in terms of data reduction and data reconstruction with suitable figures.
   (b) Describe the turning point algorithms and its disadvantages.   [12]

4. (a) With the suitable figures discuss on the QRS detection using differentiation technique.
   (b) With suitable block diagrams describe the real time QRS detection algorithm.   [12]

5. (a) Describe the ECG analysis using rule-based expert system and multivariate statistical pattern recognition method.
   (b) Explain with suitable figures of an isometric line of ECG and its importance in ST- segment.   [12]

6. Explain in detail on a adaptive noise for
   a) Enhance ECG monitoring.
   b) Enhance fetal ECG monitoring.   [12]

7. (a) Using yule-walker equations in auto correlation method derive the prediction coefficients of AR process.
   (b) With suitable figures discuss on the analysis of evoked potentials using prony's method.   [12]

8. (a) Explain in detail on detection of spikes and spindles.
   (b) Discuss in brief on detection of alpha, beta and gamma waves.   [12]

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