R09

Code No: C3807, C7007

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations March/April-2011
SPEECH PROCESSING
(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, ELECTRONICS & COMMUNICATION)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1. a) What are the various methods of Speech Production processes and discuss the Acoustic Theory of Speech Production.
   b) Explain briefly Digital Modeling of Speech Signals. [12]

2. Explain how Speech vs Silence Discrimination using Short time Energy and Zero crossing with neat schematic of signal flow. [12]

3. Describe Linear Predictive Coding of Speech Signals and Discuss the Cholesky Decomposition Solution for Covariance Method for LPC Analysis. [12]

4. Describe the various Homomorphic Speech Processing systems and discuss the performance analysis of Homomorphic Vocoder. [12]

5. a) Mention the various Speech Enhancement Techniques and Explain Speech Enhancement using Wiener Filter Approach.
   b) Discuss the Single Microphone and Multi-microphone Approaches for Speech Enhancement. [12]

6. What are basic properties of HMM for Speech Signals and discuss the Viterbi Algorithm in detail. [12]

7. a) Give a brief note about the features that distinguish speakers.
   b) Explain with a suitable flow diagram, a typical Speaker Recognition System with reference to Speaker verification and Speaker Identification. [12]

8. Write short notes on the following:
   a) Applications of LPC Parameters
   b) Isolated Digit Recognition System
   c) Language Models [12]

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