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Code No. : 5211

VASAVI COLLEGE OF ENGINEERING (*Autonomous*), HYDERABAD
M.E. I Year (ECE) II-Semester (Main) Examinations, July-2016

(Communication Engineering & Signal Processing)

Speech Signal Processing

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A ($10 \times 2=20$ Marks)

1. Classify various types of Speech signals with examples.
2. Define PARCOR coefficient.
3. Define Prosody of speech signal.
4. Brief any one method to detect end points of voice speech.
5. Describe model based separation.
6. Draw the block diagram of homo-morphic speech processing system.
7. Illustrate isolated word recognition system.
8. Justify the reason for calling HMM as Hidden.
9. Write the standards of MPEG Audio coding.
10. Discuss about Psychoacoustic model.

Part-B ($5 \times 10=50$ Marks)

(All bits carry equal marks)

11. a) Explain about the organs responsible for production of speech by human.
b) Describe about short time energy and short time zero crossing count for speech signal.
12. a) Illustrate the synthesis of speech by Linear Predictive Coder.
b) Explain with neat sketch about Gold Rabiner pitch tracker.
13. a) Explain in detail about complex cepstrum.
b) Write in brief about sound mixture and separation.
14. a) Illustrate the concept of Voice Morphing in Speech transformation.
b) With neat sketch explain about speaker recognition systems.
15. a) Write short notes on high quality audio coding using psychoacoustic models.
b) Outline the sequence of steps present in a bowed string instrument.
16. a) Describe about digital models of speech signal in detail.
b) Explain about vector quantizer coder.
17. Write short notes on any **two** of the following:
 - a) CASA
 - b) Hidden Markov model of Speech recognition.
 - c) Music signals
