

Subject Code: H4506/R13

M. Tech –II Semester Regular/ Supply Examinations, October, 2015

SPEECH PROCESSING

(Common to SSP, DIP, CE&SP, IP, C&SP, SP&C)

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions

All questions carry EQUAL marks

1. a). Describe the speech production mechanism and identify the different categories of excitation?
b). What is phoneme? Explain in detail about vowels semivowels, diphthongs and consonants
2. a). With the block diagram concept, Explain the Short-time average zero crossing method. Specify the steps infrequency domain representation of speech is required?
b). What are the uses of pitch period estimation? Give examples/applications
3. a). Explain the method to determine pitch period of speech signal using LPC analysis?
b). Explain the basic principal of linear predictive analysis?
4. a). What is complex ceptrum? Explain the procedure to evaluate cepstrum of a speech signal? State properties of complex ceptrum
b). What is importance of formants in speech processing?
5. a). Draw and Explain, isolated digit recognition system using Dynamic time warping.
b). Compare Speaker Identification system with Speaker Verification system
6. a). Discuss the properties of complex ceptrum of a stable sequence?
b). What is 'complex ceptrum' $x^*(n)$ of the speech? Specify its properties, with related equations?
7. a). How do you differentiate the speech and silence using energy and zero crossing?
b). Explain one mechanism of pitch period estimation
8. a). Write short notes on the following:
 - i). Speech enhancement
 - ii). Articulators
b). With the related block diagram, explain the 'homomorphic vocoder' containing an analyzer and synthesizer.
