[Oct-17]

[EUREC-723]
B.Tech. Degree Examination
Electronics & Communication Engineering
VII SEMESTER

SPEECH PROCESSING
(Effective from the admitted batch 2007–08)

Time: 3 Hours Max.Marks: 60

Instructions: Each Unit carries 12 marks.
Answer all units choosing one question from each unit.
All parts of the unit must be answered in one place only.
Figures in the right hand margin indicate marks allotted.

UNIT-I

1. a) With a schematic diagram of Digital Speech processing, explain the mechanism of speech production 6
b) Explain the Digital models for Speech signals 6

OR

2. a) Write differences between Acoustic quantity Electronic quantity Measures 6
b) Briefly explain the applications of Speech recognition systems 6

UNIT-II

3. a) With related to equations explain the terms 6
   (i) Short time energy    (ii) short time average magnitude
   (iii) Short time zero crossing rate
b) Explain zero crossing rate method used to classify the speech signals into voiced, unvoiced signals, mention its limitations 6

OR

4. a) What is Companding? Write the significance of is Companding in Speech processing 6
b) With a schematic diagram explain the operation of parallel processing time domain pitch detector 6
UNIT-III

5. a) What do you mean by spectrogram? Explain the acoustic impetetration of phonemes using spectrograms

b) Explain about sampling rates of speech signals in time and frequency

OR

6. a) Compare various waveform coding techniques for speech coding

b) Explain various speech parameters of LPC & write the applications LPC

UNIT-IV

7. a) What is homomorphic speech processing? Explain in detail

b) What is a pitch tracked? Discuss in detail about gold-rabiner pitch trackers

OR

8. a) Explain the Speech synthesis based on speech Production mechanism

b) What is a diaphone? What information is stored for each diaphone? What are the advantages of using diaphones rather than phones or words as the units of synthesis?

UNIT-V

9. a) Explain in detail about dynamic time warping (DTW) method

b) Explain various spectral distance measures with examples?

OR

10. a) How does a recognizer based on HMM handle timing and spectral variability in speech? How is segmentation efficiency accomplished with HMM

b) With block diagram explain in detail the structure of word recognition system

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