B.TECH SEM – VIII (2007 COURSE) (ELECTRONICS ENGG.) :
SUMMER - 2018
SUBJECT: ELECTIVE – II: b) SPEECH PROCESSING

Day: **Thursday** Time: **02.30 PM TO 05.30 PM**
Date: **07/06/2018** **S-2018-2883** Max Marks: 80

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Draw neat and labeled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.
5) Assume suitable data if necessary.

SECTION – I

Q.1 **a)** Give a brief note on Prosody. **[04]**

b) Describe the speech analysis in detail. **[05]**

c) A speech signal has root mean square amplitude of 2V. The signal is to be coded using six bits. The signal density is assumed to be Laplacian. Find the step size. Find quantization noise power. Find the SNR. **[05]**

Q.2 **a)** Classify and defines the phonemes with the help of diagram. **[07]**

b) Describe the human speech production system with the help of a labelled diagram. **[06]**

Q.3 **a)** Describe the frequency domain parameters used for speech analysis. **[07]**

b) What is the basic principle of Linear Predictive analysis? **[06]**

Q.4 **a)** Discuss the channel vocoder with a neat diagram. **[07]**

b) Briefly describe the Vector Quantization Coders (VQ). **[06]**

SECTION – II

Q.5 **a)** Explain with block schematic speech synthesis by rule. **[05]**

b) What are the basic approaches to speech recognition? **[05]**

c) Explain Text-promoted speaker verification. **[04]**

Q.6 **a)** Explain synthesis based on waveform coding. **[07]**

b) Describe concatenative synthesis with an example. **[06]**

Q.7 **a)** How Hidden Markow Model (HMM) is applied in speech recognition? **[07]**

b) What are the language models in speech recognition? Describe n-gram model? **[06]**

Q.8 **a)** Describe the text-independent speaker verification with the help of example. **[07]**

b) What are the similarity measures for text dependent and text independent? **[06]**

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