

**B. Tech. Sem -VIII (E & TC Engg.) (2014 COURSE) (CBCS) :
SUMMER - 2019**

SUBJECT : ELECTIVE - II : SPEECH AND AUDIO PROCESSING

Day : Thursday
Date : 30/05/2019

S-2019-2946

Time : 02.30 PM TO 05.30 PM
Max. Marks : 60

N. B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data, if necessary.

Q. 1 Explain the human speech production system with the help of a labeled diagram. (10)

OR

Discuss the nature of the speech signal and explain why the analysis is difficult? (10)

Q. 2 Explain the use of parallel processing approach for accurate pitch period estimation. (10)

OR

What is a cepstrum? How to evaluate the cepstrum of a speech segment? (10)

Q. 3 Explain the homomorphic processing system for convolution with a block schematic. Justify the use of an LTI filter for a convolved signal. (10)

OR

Define the cepstral domain. How will you find the cepstral coefficients for a speech frame of size 256 samples? (10)

Q. 4 Draw a diagram of a lattice structure for an all pole filter and explain it. (10)

OR

Explain Levinson-Durbin algorithm for calculation of predictor coefficients. (10)

Q. 5 Discuss different quantization techniques. Explain uniform quantizers. (10)

OR

What is waveform coding? Explain different waveform coding techniques. (10)

Q. 6 Write state of the art of speech recognition, what are the problems with a speech recognition system? (10)

OR

Draw a block schematic for the training mode of a speech recognition system and explain its operations. (10)

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