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Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(ECE)(2016 Batch) (Sem.-2)

**DIGITAL SPEECH & IMAGE PROCESSING**

Subject Code : MTEC-202

Paper ID : [74279]

Time : 3 Hrs.

Max. Marks : 100

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt any FIVE questions out of eight questions.
2. Each question carries TWENTY marks.

Q1. Design a high pass filter with frequency response given by :

$$H_d(e^{jw}) = \begin{cases} 0 & -\pi/4 \leq w \leq \pi/4 \\ e^{j3w} & \pi/4 < |w| \leq \pi \end{cases}$$

using Hanning window with  $N = 7$ . Also determine the frequency response of designed filter.

- Q2. With the help of block diagram explain the different elements of speech recognition system. Also discuss in detail the various matching algorithms used in speech recognition
- Q3. Explain the different applications of IIR and FIR filters in the area of speech and image processing.
- Q4. What do you understand by image enhancement? Explain any two methods of image enhancement. <http://www.punjabpapers.com>
- Q5. What do you understand by image compression? Discuss the DCT and KLT methods for image compression.
- Q6. What is the image segmentation? What are the applications of image segmentation?
- Q7. a) What are different kinds of noises may present in an image? Explain these noises based on their probability distribution.
- b) What is Wiener filtering? Where it is used in image processing? Also explain its implementation in image processing.
- Q8. Write short notes on :
- a) Image thresholding
  - b) Nature of sound and harmonics
  - c) Speaker recognition.