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Total No. of Pages : 01

Total No. of Questions : 08

**M.Tech. (ECE) (Sem.-2)**  
**DIGITAL SPEECH & IMAGE PROCESSING**  
**Subject Code : EC-508**  
**M.Code : 36209**

Time : 3 Hrs.

Max. Marks : 100

**INSTRUCTION TO CANDIDATES :**

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

- Q1 a) Compare the performance of FIR and IIR filters in speech and image processing.  
b) Explain the steps used in FIR filter design.
- Q2 a) Explain the acoustic theory of speech production with the help of suitable diagram.  
b) Name the methods that are used to design the IIR filter. Explain the step invariant method.
- Q3 a) Explain harmonics and resonance measurement process in speech processing.  
b) Explain in detail the various methods of speech recognition.
- Q4 a) Explain slant and cosine transforms in detail.  
b) Explain the working of isolated digit recognition system.
- Q5 a) Explain the generalize Wiener filter computational technique for image restoration.  
b) Explain amplitude segmentation method.
- Q6 Write short notes on following :
- a) Edge detection
  - b) Thresholding
  - c) Geometry description
- Q7 Explain Karhunen Loeve compression predictive coding scheme for image compression.
- Q8 a) Explain grey scale modification used for image enhancement.  
b) Explain constrained deconvolution method.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**