Paper ID [EC508]

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MAY 2008

M.Tech. (Sem. - 1st)

DIGITAL SPEECH AND IMAGE PROCESSING (EC - 508)

Time : 03 Hours

Maximum Marks : 100

Instruction to Candidates:

1) Attempt any **Five** questions.

2) **All** questions carry equal marks.

Q1) Find the digital IIR filter for the second order low pass analog filter given by the following equation for *T(s)* for a sampling period T = 0.05s.

$$T(s) = \frac{15}{s(s+15)}$$

Q2) Name the methods that are used to design the IIR filter. Explain the step invariant method.

Q3) Explain the different approaches used for the automatic speech recognition by a machine.

Q4) Explain how filter banks are used in speech processing by a machine?

Q5) Explain the term dynamic time warping in context to speech processing.

Q6) What are the different methods that are used for image enhancement? Explain edge enhancement method in detail.

Q7) Name the different transforms that are used in the compression of an image. Explain the compression algorithm used to get jpeg file format.

Q8) Write short notes on the following :

(a) Human speech production

(b) Karhunen Loeve compression predictive coding schemes

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