SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   Total number of pages:[01]

M.Tech. || ECE || 2nd Sem
Digital Speech & Image Processing
Subject Code: EC-508
[REGULAR]

Time allowed: 3 Hrs   Max Marks: 100

Important Instructions:
- **Attempt all questions**
- **Each question carries 20 marks**
- **Assume any missing data**

Q. 1.   Draw and explain digital signal processing block diagram. List advantages & | **CO1**
disadvantages of digital signal processing over analog signal processing.
OR
Compare performances of IIR & FIR filters in Speech and Image Processing. | **CO1**

Q. 2.   Describe acoustic theory behind speech production. Explain effects of losses | **CO2**
in vocal tract and radiation at lips.
OR
What do you understand by pitch detection? Explain pitch synchronous | **CO2**
spectrum analysis.

Q. 3.   Explain Discrete and Fast Fourier Transforms in speech processing. | **CO3**
OR
Explain properties of Fourier Transform helpful in speech and image | **CO3**
processing.

Q. 4.   What are Weiner and recursive filtering? | **CO4**
OR
What do you mean by image enhancement? Explain any two methods of | **CO4**
image enhancement methods.

Q. 5.   Discuss image compression technique used in jpeg files. List various similar | **CO4**
algorithms.
OR
What is image segmentation? Explain amplitude image segmentation. | **CO4**