

[Total No. of Questions - 8] [Total No. of Printed Pages - 2]  
(2063)

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M.Tech 2nd Semester Examination

Image Processing

EC-202

Time : 3 Hours

Max. Marks : 100

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.*

**Note :** Attempt any five questions.

1. (a) Explain the components of an image processing system. Give the block diagram.  
(b) Discuss Image Sampling & Quantization. **(10×2)**
2. (a) What is image Negative? Explain power law transformations.  
(b) Describe the steps involved in histogram matching. **(10×2)**
3. (a) Give following noise models  
(i) Gaussian noise  
(ii) Impulse (Salt & pepper noise)  
(b) What would be the effect on a noisy image by the use of harmonic & contraharmonic mean filter. **(10×2)**
4. (a) Explain the conversion RGB to HSI color model.

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- (b) Explain the principle behind the Huffman coding taking a suitable example. **(10×2)**
5. (a) What are the methods for edge linking boundary detection.
- (b) Discuss the gradient operations on a digital image & its physical significance. **(10×2)**
6. (a) What is histogram of a digital image?
- (b) Explain LZW coding with an example. **(10×2)**
7. (a) Explain how Fourier Transform is useful in digital image processing & Explain properties of Fourier Transform.
- (b) Explain elements of visual perception. **(10×2)**
8. Write short notes on (Attempt any four)
- (a) Psychovisual redundancy
- (b) Color Models
- (c) Lossy image compression
- (d) Histogram equalization
- (e) De-blurring algorithm. **(5×4)**