B.E. (Computer Science & Engineering) Eighth Semester (C.B.S.)
Elective-IV : Digital Image Processing

P. Pages : 2

Time : Three Hours

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0701

NRT/KS/19/3697

Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the various elements of digital image processing system with a suitable diagram. **7**

b) Discuss various spatial transformations with suitable diagrams and discuss their effects. **7**

OR

2. a) What is the basic difference between image processing and audio signal processing? **7**

b) What do you mean by resolution of an image? Relate resolution with processing time and communication cost. **7**

3. a) How can we perform the conversion of image in RGB color model into CMY model? **7**

b) What do you mean by grayscale transform of an image? How can you implement lookup table for light and contrast modification. **7**

OR

4. a) What do you mean by image histogram? What could be possible comment that can be made about quality of an image by looking at histogram of that image? **7**

b) Discuss the following histogram technique for image enhancement. **7**
- Histogram specification
- Local enhancement

5. a) Discuss smoothening spatial filters? **6**

b) Discuss following with respect to DFT. **7**
- Separability
- FFT

OR

6.	a)	Discuss any one filter for image sharpening in frequency domain.	**6**
	b)	Explain the process of high pass and low pass filtering in frequency domain.	**7**
7.	a)	Discuss the method of constrained least square filtering and compare its performance with Weiner filtering?	**7**
	b)	Explain and compare mean square error filtering with inverse filtering.	**6**

OR

8.	a)	What are different types of noise in image processing? Explain additive and salt-pepper noise.	**6**
	b)	Discuss one compression technique which would be efficient to compress data with long sequence of repeated characters.	**7**
9.	a)	With suitable example explain Arithmetic coding and decoding. Discuss average bits required for the same.	**7**
	b)	Explain the boundary representation of object and chain codes.	**6**

OR

10.	a)	Explain following descriptors. - Regional descriptors - Simple descriptors	**6**
	b)	What is the need for image segmentation? Discuss any one segmentation algorithm in detail.	**7**
11.	a)	Draw and explain block diagram of JPEG encoder and decoder.	**7**
	b)	Explain Bit plain coding technique.	**6**

OR

12.	a)	Write short note on- - Content based image retrieval - Authentication and digital watermarking.	**6**
	b)	Explain sharpening and smoothing filters in spatial domain. What properties these masks must satisfy.	**7**

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