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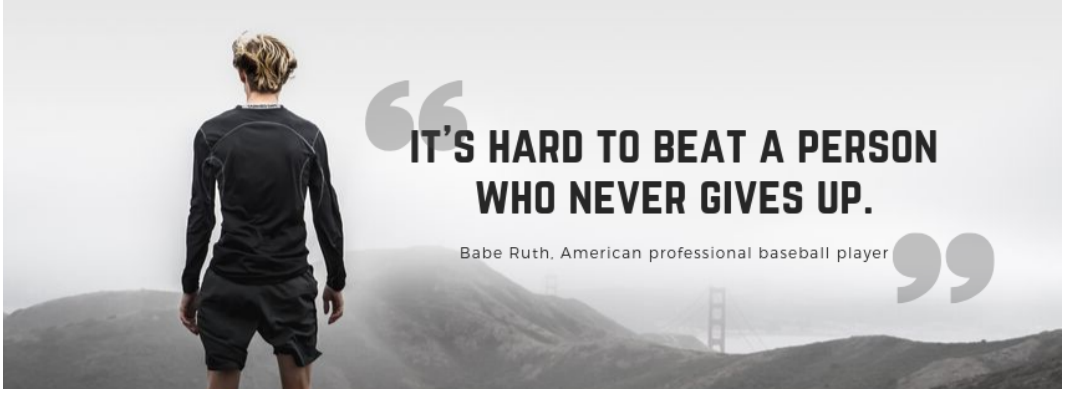

B.E.Eighth Semester (Computer Science & Engineering) (C.B.S.)

Elective - IV : Digital Image Processing

P. Pages : 2 **NKT/KS/17/7615**

Time : Three Hours * 0 7 4 3 * Max. Marks : 80

Notes :
1. Solve Question 1 OR Questions No. 2.
2. Solve Question 3 OR Questions No. 4.
3. Solve Question 5 OR Questions No. 6.
4. Solve Question 7 OR Questions No. 8.
5. Solve Question 9 OR Questions No. 10.
6. Solve Question 11 OR Questions No. 12.
7. Due credit will be given to neatness and adequate dimensions.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.
10. Use of non programmable calculator is permitted.

1. a) Explain Basic relationships between pixels. **6**

b) Explain Basics of Intensity Transformations. **8**

OR

2. a) Explain how an image is formed for a given continuous image? Discuss various elements of an image processing system. **8**

b) Explain Applications of Digital Image Processing. **6**

3. a) Explain the need of histogram equalization Derive the expression for transfer function of histogram equalization. What are the advantage of histogram equalization. **7**

b) Explain smoothing spatial filters. **6**

OR

4. a) Explain color image processing with color model. **6**

b) Image is given of 64x64 pixel with gray level. Equilise histogram of it. **7**

5. a) How image is enhanced in frequency domain. Explain any one method in detail. **8**

b) Explain selective filtering in detail. **6**

OR

6. a) Explain properties of 2D DFT. **6**

b) Explain various filters for image smoothing and sharpening operation. **8**

7. a) Explain model of image Restoration process. **7**

b) Explain geometric mean filter. **6**

OR

8. a) Distinguish between mean square error filtering and constrained least square filtering. **8**

b) Explain Restoration of image in the presence Noise only. **5**

9. a) Explain Coding Redundancy in detail. **4**

b) Explain briefly about how different transforms are selected in image compression. Explain with example. **9**

OR

10. a) Write about Huffman coding. How average length will be calculated? **9**

b) Explain Digital Image Watermarking. **4**

11. a) Discuss about region based image segmentation technique. Compare it with threshold region based technique. **8**

b) Explain chain codes in detail. **5**

OR

12. a) Explain skeleton and shape numbers. **8**

b) Explain Canny Edge detector. **5**

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Itâ€™s hard to beat a person who never gives up.

~ Babe Ruth