

Sem- VII / comp / image processing / 15-12-2016
CBGS

QP CODE : 811902

(3 Hours)



[Total Marks : 80

- N.B. (1) Question No. 1 is **Compulsory**.
 (2) Attempt any **THREE** questions out of remaining questions.
 (3) Assume any suitable data if required with justification.

- Q. 1 a) Explain any five zero memory operations. 10
 b) Perform histogram equalization and draw new equalized histogram of the following image data. 10

Gray level	0	1	2	3	4	5	6	7
Number of pixels	800	1000	850	650	300	250	100	150

- Q. 2 a) Find the DFT of the given image: 10

0	3	3	1
3	1	2	1
3	2	4	2
1	1	2	1

- b) What is segmentation? Explain (i) Region Growing (ii) Region Splitting (iii) Thresholding. 10

- Q. 3 a) Explain with an example that the first difference of a chain code normalizes it to rotation. 10
 b) Explain the following morphological operations: 10
 (i) Opening (ii) Closing

- Q. 4 a) Classify Image Compression methods in detail along with the different redundancies that can be present in digital images. 10
 b) What are various file formats? Explain each in brief. 10

- Q. 5 a) Given 10

F =

10	44	15
10	14	48
11	10	22

- i) Find 3-bit IGS coded image and calculate compression factor and BPP.
 ii) Find the decoded image and calculate MSE and PSNR.

- b) Write 8 x 8 HADAMARD transform matrix and its signal flow graph. Using Butterfly diagram, compute HADAMARD transform for $x(n) = \{1, 2, 1, 2, 1, 2, 3, 4\}$ 10

- Q. 6 Write short notes on 20
 a) Discrete Cosine Transform. (b) Hough transform.
 c) HSI color model. (d) 4, 8 and m-connectivity