

(3 Hours)

Total Marks : 80

- N. B. : (1) Q.1 is compulsory.
(2) Solve any three questions from remaining 6 questions
(3) Assume suitable data if it is required.

- Q.1 (a) Justify /Contradict the following statements [20]
(i) K.L. transform is also called as method of principal component analysis.
(ii) Entropy of an image is maximized by histogram equalization.
(b) Compare: Dilation and Erosion
(c) Explain deferment types of frames in video signal.

- Q.2 (a) For following Digital image as shown in Fig.(2), find (i) Negative of the image
(ii) Bit plane slicing (iii) Perform contrast modification as per the characteristics given in fig 1
(iv) Draw histogram of new image [10]

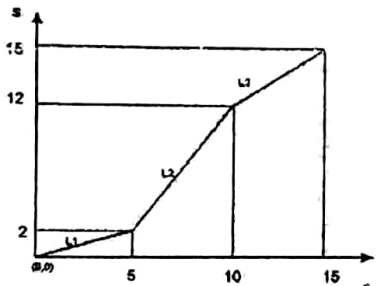


Fig.(1)

10	2	13	7
11	14	6	9
4	7	3	2
0	5	10	7

Fig.(2) Digital Image

- (b) Explain dynamic range compression technique with application. [05]
(c) Explain image deradation model in detail. [05]
Q.3 (a) Write short no on: Wiener Filter [08]
b) Find DFT of the following image [06]

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

- (c) Given set of points use Hough transform to join these points
A(1,4), B(2,3), C(3,1), D(4,1), E(5,0) [06]

[TURN OVER]

Q.4 (a) Consider the following image

[10]

- (i) Perform Low Pass Filtering
- (ii) Perform Median Filtering
- (iii) Find High pass filtered output.
- (iv) compare result in (i) and (ii).

0	5	4
7	120	5
4	3	7

(b) What are the different motion estimation criteria for video signal. Explain Phase correlation method for motion estimation.

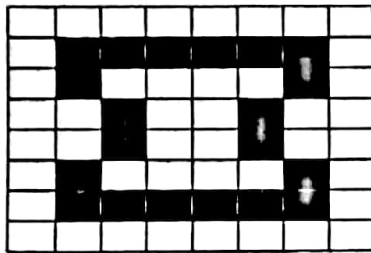
[10]

Q. 5 (a) Explain image enhancement in frequency domain in detail

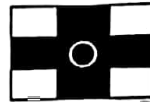
[08]

(b) The input image and structuring element is as shown in the figure. Perform region filling Operation

[08]



Input Image



Structuring element

(c) Define edge in an image. Give different edge detection mask.

[04]

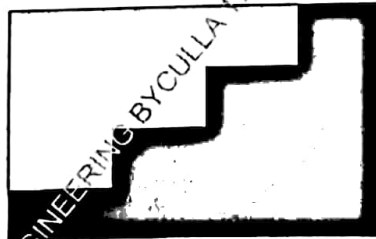
Q.6 (a) Using Graph Theoretical approach, find the edge corresponding to the minimum cost path

[06]

1	2	0
2	6	4
4	3	3

(b) Segment the following image using region split and merge technique. Draw quad tree representation for the corresponding segmentation.

[06]



(c) What is unitary transform.

[04]

(d) Explain in brief Hit or Miss Transform

[04]