

[Time: Three Hours]

[Marks: 80]

Please check whether you have got the right question paper.

- N.B:
- 1) Question 1 is compulsory.
 - 2) Answer any 3 from remaining 5 Questions.
 - 3) Figures to the right indicate full marks.
 - 4) Assume suitable data wherever necessary

Q 1 (a) Draw the JPEG Encoder and describe the role of each block 10

Q 1 (b) Explain the types of gray level transformation used for image enhancement 10

Q2 (a) Explain Homomorphic filtering in detail. 10

Q2 (b) What is a Median filter, maximum filter and minimum filter ?When is the median filter not effective in noise removal 10

Q3 (a) What is histogram? Explain histogram equalization taking a pseudo image 10

Q3 (b) Find the DFT of the image 10

$f(x,y) =$

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

Show the Magnitude and phase spectra

OR

Find the DCT of the above image

Q4 (a) Segment the image shown by using split and merge procedure. Let $p(R_i) = \text{TRUE}$ if all pixels in R_i have the same gray level. Show the quadtree corresponding to your segmentation. 10



- Q4 (b)** Show that a median filter is a non linear filter 10
- Q5 (a)** Explain 4, 8 and m connectivity between pixels 10
- Q5 (b)** Explain euclidean, D4, D8 and Dm distance by taking a suitable example 10
- Q6 (a)** How is line detected? Explain using the operators and also demonstrate by taking a set of points how edge linking can be done. 10
- Q6 (b)** Consider an 8- pixel line of gray-scale data, {12,10,13,13,10,13,57,54}, which has been uniformly quantized with 6-bit accuracy. Construct its 3-bit IGS code. 10

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