

[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**

$f(x,y)=$

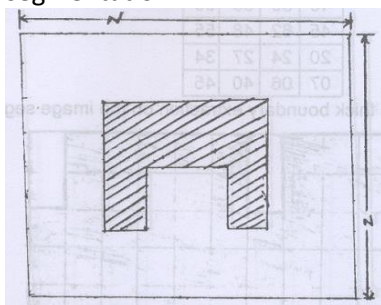
1	2	3	2
2	3	4	3
1	2	3	2
2	3	4	3

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**
