

Total No. of Questions : 4]

SEAT No. :

PB133

[6269]-347

[Total No. of Pages : 2

T.E. (E & TC Engineering) (Insem)
DIGITAL IMAGE PROCESSING
(2019 Pattern) (Semester - II) (Elective - II) (304195 (A))

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Attempt questions Q.1 or Q.2 and Q.3 or Q.4.*
- 2) *Figures to the right indicate full marks.*
- 3) *Assume suitable data if necessary.*
- 4) *Neat diagrams must be drawn wherever necessary.*

- Q1)** a) With the help of neat diagram explain various steps in image processing. [6]
b) Explain sampling and Quantization in Image Processing. How does it affect on spatial and gray level resolution in images? [5]
c) What are the different types of image? Explain any four in short. [4]

OR

- Q2)** a) Write a short note on elements of digital image processing system. [5]
b) What is color model? Explain RGB and CMY color models. State applications of both. [5]
c) Find the distance between pixels P and Q by following methods. [5]
i) Euclidean
ii) City block
iii) Chess board for 5×5 image is given below.

1	0	0	0	1	P
0	0	0	1	1	
1	0	1	1	0	
0	0	1	0	1	
0	1	1	0	0	
					Q

Coordinates of P & Q are (0, 4) and (4, 1)

P.T.O.

- Q3)** a) Specify the need of Image enhancement and Explain Spatial filtering in Image enhancement. [5]
- b) What is necessity of High boost filtering? How it is achieved? [5]
- c) What is median filter? Apply 3*3 median filter to given 4*4 gray scale image and find the processed image by considering outer row and columns are as it is. [5]

5	6	7	8
6	0	7	8
5	6	15	8
5	6	7	8

OR

- Q4)** a) Explain average filtering of an image with example. [5]
- b) Explain the following concepts in image enhancement. [5]
- Gray level slicing and
 - Log Transformation
- c) Obtain Histogram and Perform histogram equalization for a given (5*5) 3 bit image. [5]

$$I = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

