Total No. of Questions : 4]

SEAT No. :

PD126

[Total No. of Pages : 2

[6410]-448

T.E. (Electronics Telecommunication) (Insem)

DIGITAL IMAGE PROCESSING

(2019 Pattern) (Semester-II) (Elective-II) (304195 A)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

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

Q1) a) Explain functional blocks of Digital image processing in short. **[6]**

b) Consider two pixels a and b whose coordinates are (0,1) and (7,8). Calculate the Eucludian distance, chess board distance and city block distance. **[3]**

c) Explain the following connectivity between the pixels. **[6]**

4-connected

8-connected

M-connected

OR

Q2) a) What is Histogram of an image? Explain histogram of dark, bright and high contrast image. **[5]**

b) Compare RGB and YIQ color models. **[5]**

c) How much storage capacity is required to store an image with the size 1024 × 768 and 256 grey levels. **[5]**

P.T.O.

Q3) a) What is need of image enhancement? Explain categories of spatial domain image enhancement. **[5]**

b) Obtain histogram and histogram equalization of given image containing grey levels from 0 to 7. **[5]**

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

c) Compare point processing and mask processing. **[5]**

OR

Q4) a) Explain basic grey level transformation. **[5]**

b) Consider the following image, what will be the new value of a pixel (3,3) if smoothing is done using 3×3 mask. **[5]**

$$\begin{bmatrix} 3 & 1 & 2 & 0 & 4 \\ 7 & 5 & 6 & 8 & 0 \\ 2 & 3 & 0 & 4 & 6 \\ 3 & 5 & 6 & 7 & 3 \\ 0 & 9 & 1 & 7 & 2 \end{bmatrix}$$

c) Explain Bit plane slicing and its importance. **[5]**