Total No. of Questions – [04] Total No. of Printed Pages: 02

G.R. No.	

OCTOBER 2018 / IN - SEM (T1)

F. Y. M. TECH. (Signal Processing) (SEMESTER - I)

Image and Video Processing (ETPA11181)

(2018 PATTERN) P118-141(T1)

Time: [1 Hour] [Max. Marks: 20]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) **a)** What is spatial and gray level resolution? What are the limitations of the nearest neighborhood and bilinear interpolation. What are false contours? **(6)**

b) Explain with suitable example **(4)**
1) Euclidean Distance
2) Adjacency

OR

Q.2) **a)** The image segment is as shown below. **(6)**
(a) Let V = {0, 1} and compute the lengths of the shortest 4, 8, and m-path between pixels p and q. If a particular path does not exist between these two points, explain why?
(b) Repeat for V = {1, 2}.

3 1 2 1 **(q)**
2 2 0 2
1 2 1 1
(p) 1 0 1 2

b) Explain in brief any four digital image processing techniques. **(4)**

Q.3) **a)** Explain the following methods of image enhancement in spatial domain **(6)**
1) Image Negative
2) Power Law Transformation
3) Bit Plane Slicing

b) Justify the statement median filter is an effective tool to minimize sal pepper noise considering the image. (4)

$$I=\begin{bmatrix} 24 & 22 & 33 & 25 & 22 & 24 \\ 34 & 255 & 24 & 0 & 26 & 23 \\ 23 & 21 & 32 & 31 & 28 & 26 \end{bmatrix}$$

OR

Q.4) a) What is histogram of a digital image? Explain the process of histogram equalization technique used in contrast enhancement of digital images? (6)

b) Explain image filtering process using window technique. What are smoothing filters. Where they are used? (4)