

B.E. Printing Engineering 4th Year 2nd Semester Examination 2021 - 2022

Digital Image Processing

Full Marks: 70

Time: 4 Hrs.

Please read the instructions carefully and make sure answers of each COs are given separately in one place.

CO 1: Describe the underlying concepts different digital image processing operations (K2)

Answer any 1 question (1 x 17.5)

1. Describe the different neighborhood and adjacency concepts with suitable examples.
2. Describe dilation and erosion process with suitable example.

CO2: Apply the concept and algorithms of digital image processing in given image (K3)

Answer any 1 question (1 x 17.5)

3. Apply weighted averaging using following filter on the given image and show your observations.

50	100	200	30
50	100	200	30
20	180	50	200
20	180	50	200

Image

2	0	2
3	4	3
2	0	2

Filter

4. Apply VLC compression on the following image and show the compression achieved.

173	194	113	152	93	113	152	194
186	194	188	164	93	113	163	93
93	93	169	162	64	165	93	152
194	194	194	113	173	173	152	93
152	194	152	152	152	93	152	163
93	113	93	74	93	113	74	93
92	173	173	152	194	113	93	113
113	93	194	74	74	152	113	152

CO3: Analyze the requirement of probable image processing operation(s) for given goals (K4)

Answer any 1 question (1 x 17.5)

5. Consider following image and perform the required operation to segment between foreground and background.

255	250	250	221	250	250	250	250
250	250	68	70	128	250	255	255
250	150	70	68	128	255	250	255
255	150	70	68	128	128	250	250
250	255	250	68	128	128	255	250
250	255	250	70	128	150	255	250
255	255	70	75	150	150	250	255
250	255	75	75	255	150	255	255

6. Consider the image given in question 5 and analyze the output of applying following transforms.

- a. Inverse transform b. Log transform c. Power law transform with $\gamma = 1/4$

CO 4: Explain the performance of digital image processing operations in the light of different image evaluation measures (K5)

Answer any 1 question (1 x 17.5)

7. Consider the input image and output images as given below. Compare between output 1 and output 2

113	90	157
107	116	154
108	116	134

Input image

159	154	185
226	246	197
183	236	191

Output 1

132	135	135
146	231	126
173	130	135

Output 2

i) In the light of AMBE and UQI
OR

ii) In the light of MSE and PSNR