Total No. of Questions : 8]

SEAT No. :

PB3840

[Total No. of Pages : 2

[6262]-102

T.E. (E & TC)

DIGITAL IMAGE PROCESSING

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

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Your answers will be valued as a whole.*
5) *Assume suitable data, if necessary.*
6) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*

Q1) a) Explain in brief Adaptive thresholding and how it is achieved through Otsu's method. **[6]**

b) What is edge linking? Explain its approaches. **[6]**

c) What is region growing? Explain techniques of region splitting and region merging. **[6]**

OR

Q2) a) How are discontinuties detected in Image? With the help of suitable mask explain point detection and line detection. **[6]**

b) Explain different stages in carry edge detection in detail. **[6]**

c) Explain how Hough Transform is useful for edge linking. **[6]**

Q3) a) What is DCT? Give forward and reverse transform equations and important properties of DCT. How DCT helps to achieve compression. **[6]**

b) Explain Quantitative and Qualitative fidelity criteria in image compression. **[6]**

c) Explain how motion estimation plays important role in video compression? Explain Block based motion estimation. **[5]**

OR

Q4) a) Explain image compression using JPEG with suitable block diagram. **[6]**

b) Differentiate between Lossless and lossy compression. Explain one technique from each of them. **[6]**

c) What is entropy of an image? Write significance of it in image compression. **[5]**

Q5) a) What is noise model? Explain any three noise models. **[6]**

b) How Weiner filter is used for restoration of images in the presence of noise. **[6]**

c) Explain the method of estimation of degradation function. **[6]**

OR

Q6) a) Draw and explain Image degradation model. **[6]**

b) How the constrained Least square filtering is used for image restoration. **[6]**

c) Explain the three Geometric transformation in the images. **[6]**

Q7) a) What is image classification? Explain one image classification algorithm in detail. **[6]**

b) Explain in detail character recognition with it's steps in detail. **[6]**

c) Explain object recognition using structural method. **[5]**

OR

Q8) a) Explain the recognition based on decision theoretic methods. **[6]**

b) Explain content based image retrival application in detail. **[6]**

c) Explain how Deep learning using CNN is useful in classification of images. **[5]**

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