P3162

[5461]-204

B.E. (Electronics and Telecommunication)
DIGITAL IMAGE PROCESSING
(2012 Pattern) (End Semester) (Semester-I) (Elective-I) (408184A)

Time : 2½ Hours]
[Max. Marks : 70

Instructions to the candidates:

    1)   Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.

    2)   Figures to the right indicate full marks.

    3)   Assume suitable data if necessary.

    4)   Use of electronic pocket calculator is allowed.

Q1) a)   What are the different image file formats? Explain any one.   **[3]**

    b)   Explain 4-connectivity, 8-connectivity and M-connectivity between the pixels.   **[3]**

OR

Q2) What are the various steps in image processing? Explain in detail.   **[6]**

Q3) a)   What is image restoration? Explain with the help of block diagram.   **[4]**

    b)   What is image blurring? Explain how to remove image blurring.   **[3]**

OR

Q4) What is image enhancement? Explain following image enhancement techniques:**[7]**

    a)   Log transformation

    b)   Gray level slicing

Q5) a)   Explain coding redundancy and interpixel redundancy in an image.   **[4]**

    b)   Explain lossless image compression. Where you find the important applications of lossless image compression.   **[3]**

OR

Q6) Explain DCT based compression technique of an image in detail.   **[7]**

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Q7) a) Explain the following edge detection operators in image processing. **[9]**
   i) Prewitt operator
   ii) Canny operator
   iii) Laplacian of Gaussian operator

   b) Explain Hough Transform in detail. Also, give one application of Hough Transform. **[9]**

<div align="center">OR</div>

Q8) a) What is adaptive thresholding? Write an algorithm for Otsu's method of thresholding and explain the same. **[9]**

   b) Explain following morphological operations in image processing. **[9]**
   i) Dilation
   ii) Erosion
   iii) Opening and closing

Q9) a) What are statistical moments? Explain different statistical moments used for shape representation. **[8]**

   b) Explain 4-chain code and 8-chain code for the representation of an image. **[8]**

<div align="center">OR</div>

Q10) a) Explain principal components for the description of an image. **[8]**

   b) Explain "Polygonal approximation" and "Signatures" for the representation of an image. **[8]**

Q11) a) Explain following image classifiers. **[8]**
   i) Minimum distance classifier.
   ii) Correlation based classifier.

   b) Explain with an algorithm, "Biometric Authentication", in image processing. **[8]**

<div align="center">OR</div>

Q12) a) What is a "feature" and "feature extraction"? Explain the different types of features used for character Recognition using image processing. **[8]**

   b) Explain Remote sensing application of an image processing in detail. **[8]**

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