Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(CSE Engg./E-Security)   (Sem.–2)
DIGITAL IMAGE PROCESSING
Subject Code : CS-502
M.Code : 35403

Time : 3 Hrs.   Max. Marks : 100

INSTRUCTION TO CANDIDATES :
1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

Q1)   Define a Digital Image. What are the various steps involved in processing a digital image? Explain each step discussing its significance in detail.

Q2)   a)   Describe the concept of Histogram specifications and Histogram modification for image enhancement.

       b)   Discuss the pros and cons of spatial domain filtering techniques and frequency domain filtering techniques.

Q3   a)   What is the significance of Wavelet Transformations? Differentiate between Discrete and continuous Wavelet Transformation.

       b)   How a two dimensional fast wavelet transformation is similar to pyramidal coding scheme? Explain.

Q4   a)   Compare the various color models used for color image processing.

       b)   What are the various frequency domain filtering techniques? Compare their features. Which filter helps to completely eliminate ringing effect?

Q5   a)   What is the significance of image compression? Is there any difference between the two terms image compression and data compression? List various image compressions methods.

b) Consider the simple 4×8, 8 bit image :

21 21 95 95 169 169 243 243

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21 21 95 95 169 169 243 243

    i. Compress the image using Huffman coding.

    ii. Compute the compression achieved and the effectiveness of the Huffman coding.

Q6) Define the term Image Segmentation. Give the broader categorization of various segmentation techniques. Describe the various edge linking and boundary detection techniques.

Q7) What is the significance of representation and description in digital image processing? Describe the various representation techniques by taking suitable examples of your choice.

Q8) What are the various decision theoretic and structural methods of object recognition? Describe by taking supportive examples wherever required.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.