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**Question Paper Code : 51414**

**B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Seventh Semester**

**Electronics and Communication Engineering**

**EC 2029/EC 708/10144 ECE 41 – DIGITAL IMAGE PROCESSING**

**(Regulations 2008/2010)**

**(Common to 10144 ECE 41 – Digital Image Processing for B.E. (Part-Time) Seventh Semester – ECE – Regulations 2010)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. Distinguish between monochrome and gray scale image.
2. What is the goal of an image transform ?
3. What is image filtering ?
4. Specify the need for image enhancement.
5. When will a constrained least square filter( CLS) reduce to an inverse filter ?
6. What are the advantages of homomorphic filtering ?
7. Compare Canny and Gaussian edge detector.
8. Give two applications of image segmentation.
9. Determine whether the code(0,01,1 1) is uniquely decodable or,not.
10. Differentiate scalar and vector quantization.

**PART – B (5 ×16 = 80 Marks)**

11. (a) (i) Explain the fundamental blocks in digital image processing system. (7)

(ii) Compute the DCT for the sub image of size  $5 \times 5$  and the image is given as (9)

20 30 40 50 40

20 35 45 45 40

30 70 70 70 40

60 65 60 65 40

20 25 49 45 40

**OR**

(b) (i) Describe the elements of visual perception with suitable diagram. (8)

(ii) Discuss the properties and applications of KL Transform. (8)

12. (a) (i) Explain the histogram equalization method of image enhancement. (10)

(ii) Compare the various filters available under frequency domain for image enhancement. (6)

**OR**

(b) (i) Describe the filters used for noise distribution removal from images. (8)

(ii) Discuss the techniques applicable for color image enhancement (8)

13. (a) (i) Draw the block diagram for image degradation model and explain. (8)

(ii) Explain the use of Wiener filtering in Image restoration. (8)

**OR**

- (b) (i) Discuss the concept of inverse and pseudo inverse filters for image restoration. (8)
- (ii) What are the spatial transformation techniques used for image restoration? Explain them in detail. (8)
14. (a) (i) Explain the thresholding approach of segmenting an image. (8)
- (ii) Discuss the use of morphological watersheds for image segmentation. (8)
- OR**
- (b) (i) Discuss in detail any two region based image segmentation techniques. (8)
- (ii) With an algorithm explain watershed segmentation process. (8)
15. (a) (i) With a block diagram explain shift coding approach for image compression. (8)
- (ii) Describe the stages in MPEG image compression standard. (8)

**OR**

- (b) (i) With an example explain Huffman coding scheme results with image compression. (8)
- (ii) Explain the parts of JPEG compression block diagram. (8)
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