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Question Paper Code : 41139

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Sixth/Seventh/Eighth Semester

Electronics and Communication Engineering

CS 1002 — DIGITAL IMAGE PROCESSING

(Common to Computer Science and Engineering and Information Technology)

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is image sampling?

2.   What is the need for perspective transformation?

3.   What is the principle of mask processing?

4.   Why does the discrete histogram equalisation technique not yield a flat histogram, in general?

5.   What is white noise?

6.   Why is the bipolar impulse noise called salt and pepper noise?

7.   How is sub image size selection a fleet transform coding error?

8.   Define instantaneous code and uniquely decodable code.

9.   How does Laplacian operator defect the presence of edge?

10. What is boundary of an object? How is the boundary represented?

PART B — (5 × 16 = 80 marks)

11. (a)   Explain the basic relationships between pixels.   (16)

Or

(b)   Compare and contrast DCT and DFT.   (16)

12. (a) (i) What is a low pass filtered image? Is it same as mean filtered image? Explain with suitable arguments. (8)

   (ii) Explain histogram equalisation technique for image enhancement. What are the limitations? (8)

Or

   (b) (i) What is meant by image sharpening? How is this performed? Give suitable masks is realizing this. (8)

   (ii) State the principle of homomorphic filtering. Illustrate with suitable application. (8)

13. (a) (i) Discuss the different types noise models considered in image degradation. (8)

   (ii) Explain how SVD of an image is obtained. (8)

Or

   (b) (i) Illustrate the principle of inverse filtering approach to image restoration. (8)

   (ii) Discuss the applications of Wiener filter and compare it with inverse filter. (8)

14. (a) (i) Explain the LZW coding. (8)

   (ii) Explain in detail about wavelet coding. (8)

Or

   (b) With example, explain the JPEG compression.

15. (a) (i) Explain region based segmentation with suitable diagram. (8)

   (ii) Describe in detail about regional descriptors and compare it with simple descriptor. (8)

Or

   (b) (i) Explain the polygonal approximation technique. (8)

   (ii) Discuss texture, boundary segments, chair codes and thresholding. (8)

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