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Question Paper Code : 33345

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Seventh Semester

Electronics and Communication Engineering

EC 1009/CS 1002/070250051 — DIGITAL IMAGE PROCESSING

(Common to Information Technology and also Common to Eighth Semester,
Computer Science and Engineering)

(Regulation 2004/2007)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Moire pattern effect?
2. State the conditions on partitions described in region based segmentation.
3. Define image subtraction with one commercial application.
4. What is bit allocation?
5. State the simple descriptors used for describing the boundary of the region.
6. What is pseudo inverse and specify its uses?
7. What is white block skipping?
8. What are the components involved in the homomorphic filtering with expression?
9. State Hadamard transform.
10. Define salt and pepper noise and mention its PDF.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the properties of 2D Fourier Transform. (8)
(ii) Write notes on brightness adaptation and discrimination. (8)

Or

- (b) (i) Explain the significance of spatial and gray-level resolution. (6)
(ii) Describe the fundamental relationship between spatial and frequency domain in detail. (10)
12. (a) Explain the spatial and frequency domain filters involved smoothing process in detail. (16)

Or

- (b) Write notes on the following :
- (i) Power-law transformation (4)
(ii) Bit-plane slicing (4)
(iii) Point processing and mask processing (4)
(iv) Laplacian filters. (4)
13. (a) (i) Describe Weiner filter with its mask (6)
(ii) Explain the procedure for singular value decomposition. (6)
(iii) What is Rayleigh noise? (4)

Or

- (b) (i) What do you mean by blind image restoration? Explain in detail (8)
(ii) Explain the model of image degradation/restoration process. (8)
14. (a) Describe the error free compression techniques. (16)

Or

- (b) (i) Explain 'Still image compression' with a neat block diagram. (8)
(ii) How to implement zonal coding and threshold coding? Describe in detail. (8)
15. (a) Explain the following :
- (i) Gradient operators (8)
(ii) Optimal global and adaptive thresholding. (8)

Or

- (b) Explain the following descriptors :
- (i) Fourier descriptors (8)
(ii) Topological descriptors. (8)