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Question Paper Code : 81060

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Elective

Applied Electronics

AP 9251/AP 951/10244 CME 13 — DIGITAL IMAGE PROCESSING

(Common to M.E. Computer and Communication, M.E. Communication Systems,
M.E. Digital Electronics and Communication Engineering and M.E. Computer
Science and Engineering)

(Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Machband effect?
2. Define the term contrast.
3. Write the convolution property of 2D DFT.
4. Write any two applications of wavelet transform.
5. Draw the image restoration-degradation model.
6. What is gray level interpolation?
7. What is region growing?
8. Name the different patterns.
9. State the need for data compression.
10. Expand :
 - (a) SPIHT.
 - (b) MPEG.

PART B — (5 × 16 = 80 marks)

11. (a) Draw the block diagram of an image processing system and explain the function of each block. (16)

Or

- (b) Explain the principle of working of a digital camera. (16)

12. (a) An image is represented by the following matrix : (16)

$$A = \begin{bmatrix} 18 & 79 & 50 & 42 \\ 41 & 09 & 32 & 10 \\ 41 & 50 & 79 & 03 \\ 21 & 18 & 79 & 02 \end{bmatrix}$$

Find the 2D DCT of the image.

Or

- (b) Discuss the significance and applications of
(i) Walsh transform
(ii) Haar transform. (16)

13. (a) Explain the various steps in enhancement of an image. (16)

Or

- (b) Briefly explain about
(i) Inverse filtering
(ii) Wiener filtering. (16)

14. (a) Discuss the concept of
(i) Edge detection (8)
(ii) Edge linking and boundary detection. (8)

Or

- (b) Discuss the steps involved in image recognition using neural networks. (16)

15. (a) With an example of an image, explain
(i) Hoffman coding
(ii) Runlength coding. (16)

Or

- (b) Discuss the working of JPEG standard with necessary sketches.