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Question Paper Code:49410

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Elective

Electronics and Communication Engineering

14UEC910 - DIGITAL IMAGE PROCESSING

(Regulation 2014)

Duration: Threehours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The primary colors are

- (a) Red, Green, Blue (b) Magenta, Cyan, Yellow
(c) Black and White (d) None of the above

2. Intensity levels in 8-bit image are

- (a) 128 (b) 255 (c) 256 (d) 512

3. Smoothing filters are mostly used in

- (a) Blurring (b) Noise reduction (c) Contrast (d) A and B

4. The method used to generate a processed image that has a constant histogram is called

- (a) Histogram enhancement (b) Histogram matching
(c) Histogram normalization (d) Histogram equalization

5. Salt and pepper noise can be interchangeably used with

- (a) Rayleigh noise (b) Gamma noise (c) Black noise (d) Impulse noise

6. In Geometric mean filter if the parameter $\alpha=1$ then it work as
 (a) Inverse filter (b) Weiner filter (c) Band pass filter (d) Notch filter
7. Second derivative approximation says that it is non-zero at
 (a) Intensity ramps (b) onset
 (c) Constant intensity (d) All mentioned above
8. Gradient computation is more useful in
 (a) Point detection (b) Edge detection (c) Area detection (d) Line detection
9. The Hit-or-Miss transformation is used for shape _____
 (a) Removal (b) detection (c) Compression (d) Decompression
10. When working with images we require the structuring elements be
 (a) Square elements (b) rectangular elements
 (c) triangular elements (d) Circular elements

PART - B (5 x 2 = 10 Marks)

11. Define the term mach band effect.
12. What is the need for Directional Smoothing in image processing?
13. How an image degradation process is modeled?
14. Write the process of edge linking and boundary detection.
15. List various basic morphological algorithms.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail elements of visual perception. (16)

Or

(b) Explain in detail about KL transform of images with its properties. Also explain fast KL transform. (16)

17. (a) Describe histogram specification technique in detail with its associated equations. (16)

Or

(b) Compare Smoothing and Sharpening spatial filters. (16)

18. (a) Explain how periodic noise reduction is performed by Frequency domain filtering. (16)

Or

(b) Evaluate the image restoration with the help of spatial filtering. (16)

19. (a) Summarize region based image segmentation techniques. (16)

Or

(b) How edge detection is performed in digital images by

(i) Gradient Operator. (4)

(ii) Maar-Hildreth edge detector . (6)

(iii) The Canny edge detector. (6)

20.(a) Explain in detail about Boundary descriptors. (16)

Or

(b) Explain in detail various image representation approaches (16)

