Reg. No. : | | | | | | | | | | |

Question Paper Code: 49410

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Electronics and Communication Engineering

14UEC910 - DIGITAL IMAGE PROCESSING

(Regulation 2014)

Duration: Three hours 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. Image restoration and image enhancement is performed in

(a) Both thee spatial and frequency (b) Both frequency and time

(c) Only frequency domain (d) Only spatial domain

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) Discuss in detail about the process of sampling and Quantization. (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) Explain the types of gray level transformation used for image enhancement (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.

Or

(b) Explain the thresholding techniques for image segmentation (16)

20. (a) Describe

(i) Boundary descriptor

(ii) Regional descriptor. (16)

Or

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