Reg. No. : | E | N | G | G | T | R | E | E | . | C | O | M |

Question Paper Code : 90599

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Fifth/Sixth Semester

Electronics and Communication Engineering

CEC 366 — IMAGE PROCESSING

(Common to : Electronics and Telecommunication Engineering)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is mean by bits per pixel?
2. When are fine sampling and coarse sampling used?
3. Define histogram. How is it generated for an image?
4. Differentiate between Smoothing and Sharpening Spatial Filters.
5. Sketch the block diagram of a model of the image degradation.
6. Mention the two draw backs of inverse filtering.
7. List the applications of segmentation.
8. Define the term "region growing."
9. What is the significance of lossy and lossless predictive coding?
10. Enlist the steps of Run length Coding and its example.

PART B — (5 × 13 = 65 marks)

11. (a) Explain about the image sampling and quantization process.

Or

(b) Discuss about the Two-dimensional mathematical preliminaries in detail.

12. (a) (i) Elaborate on smoothing spatial filters. (8)

(ii) Explain the concept of homomorphic filtering in detail. (5)

Or

(b) Compare and contrast Butterworth low and high pass filter, Gaussian low and high pass filter.

13. (a) Describe briefly a model of the image restoration process.

Or

(b) Explain in detail about the order-statistics filters and adaptive filters.

14. (a) Describe fundamental operation of morphological image processing.

Or

(b) (i) Discuss watershed segmentation algorithm in detail.

(ii) Elaborate on dam construction.

15. (a) Explain the method of Huffman coding with an example.

Or

(b) Describe the various boundary descriptors in detail with a neat diagram.

PART C — (1 × 15 = 15 marks)

16. (a) Evaluate the effectiveness of region splitting and merging techniques for segmenting complex images.

Or

(b) Design a novel approach for color image enhancement by integrating histogram equalization with adaptive filtering.

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