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Question Paper Code : 86531

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth/Eighth Semester

Electronics and Communication Engineering

CS 1002 – DIGITAL IMAGE PROCESSING

(Common to Seventh Semester
Computer Science and Engineering)

(Regulations 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the two processes involved in converting a continues data into digital form?

2. State convolution theorem.

3. What is the principle of mask processing?

4. Why does the discrete histogram equalisation technique not yield a flat histogram, in general?

5. Enlist the advantages of iterative image restoration technique.

6. When will Wiener filter reduce to an inverse filter?

7. How is sub image size selection a fleet transform coding error?

8. Define instantaneous code and uniquely decodable code.

9. Define Segmentation.

10. What is meant by Chair code?

PART B — (5 × 16 = 80 marks)

11. (a) Explain basic relationships between pixels in detail. (16)

Or

(b) Compare and contrast DCT and DFT. (16)

12. (a) (i) Explain the types of gray level transformation used for image enhancement. (8)

(ii) Explain in detail about spatial filtering with a suitable example. (8)

Or

(b) (i) Describe about Homomorphic filtering with suitable example. (8)

(ii) Explain in detail about image subtraction and image averaging. (8)

13. (a) (i) Explain about Noise models. (8)

(ii) Explain the singular value decomposition. (8)

Or

(b) Discuss about constrained least mean square filtering. (16)

14. (a) (i) What is LZW coding? How this leads to compression? (7)

(ii) Explain wavelet coding approach for compression? How the results are comparable? (9)

Or

(b) (i) Describe predictive coding approach for compression? (10)

(ii) Write briefly on JPEG and MPEG standard. (6)

15. (a) Describe the techniques of region splitting and merging and its variations. (16)

Or

(b) (i) Illustrate how chain codes are used to represent a boundary based on 4 or 8 — connectivity of the segments. Give an example. (10)

(ii) What is the need for polygonal approximations? Illustrate the method of finding the minimum perimeter polygons. (6)

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