

(6 pages)

Reg. No. :

Code No. : 9066

Sub. Code : HCAE 52

M.C.A. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2016.

Fifth Semester

Computer Applications

Elective — DIGITAL IMAGE PROCESSING

(For those who joined in July 2012–2015)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. _____ deals with tools for extracting image components that are useful in the representation and description of shape.
- (a) Image Restoration
 - (b) Recognition
 - (c) Segmentation
 - (d) Morphological Processing

2. Digitizing the coordinate values is called _____.

- (a) Quantization
- (b) Sampling
- (c) Both
- (d) None of the above

3. The _____ is a process that expands the range of intensity levels in an image so that spans the full intensity range of the recording medium.

- (a) Intensity — level slicing
- (b) Contrast Stretching
- (c) Gamma Correction
- (d) Bit plane Slicing

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

- (a) Histogram matching
- (b) Inverse transformation
- (c) Spatial filters
- (d) None of the above

5. BHPF Stands for _____.

- (a) Butterworth High Pass Filter
- (b) Butterworth High Pass Frequency
- (c) Butterworth High Pixel Filtering
- (d) Butterworth High Pixel Frequency



6. _____ type of filter is based on ordering the values of the pixels contained in image area encompassed by the filter.

- (a) Mean filter
- (b) Order Static filter
- (c) Median filter
- (d) Adaptive filter

7. _____ generates non block codes.

- (a) Arithmetic coding
- (b) LZW Coding
- (c) Golomb Coding
- (d) Huffman Coding

8. _____ refers to the process of reducing the amount of data required to represent a given quantity of information.

- (a) Coding Redundancy
- (b) Data Compression
- (c) Psycho visual Redundancy
- (d) Spatial Redundancy

9. _____ are based on partitioning an image into regions that are similar according to a set of predefined criteria.

- (a) Edge based Segmentation
- (b) Region based segmentation
- (c) Point Detection
- (d) Edge Detection

10. The tree structure, in which each node has exactly four descendants, is known as _____.

- (a) Stills
- (b) Images
- (c) Fractals
- (d) Quadtrees

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain light and Electromagnetic Spectrum briefly.

Or

(b) What are the basic concepts in sampling and quantization?

12. (a) How power law transformation procedure is performed? Explain.

Or

(b) Explain histogram specification briefly.

13. (a) Briefly explain the Butterworth filtering.

Or

(b) Describe the working mechanism for mean filters in image restoration.



14. (a) Explain Variable length encoding of image compression technique in detail.

Or

- (b) Describe short notes on Block Transform Coding.
15. (a) What are Edge Models? Explain its role in image processing.

Or

- (b) Explain Canny Edge Detector Algorithm.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) What is Digital Image Processing? Explain the components of Digital Image Processing in detail.

Or

- (b) In what way are Digital Images represented? Explain.
17. (a) Explain Piecewise — Linear Transformation functions in detail.

Or

- (b) Explain the fundamentals of Spatial Filtering.

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18. (a) What are the properties of 2-D Discrete Fourier Transform?

Or

- (b) Explain Adaptive Median Filtering in detail.
19. (a) Explain Huffman coding compression method.

Or

- (b) What are Video compression standards? Explain in detail.
20. (a) Explain Line detection procedure in image segmentation.

Or

- (b) Discuss the region based segmentation in detail.
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