

Seat No.

OCT-NOV 2025 WINTER EXAMINATION**1154 B.Tech. CBCS****Sub. Name: Image Processing****Sub. Code: 67818/83826/84052****Day and Date: Monday ,08-12-2025****Total Marks: 70****Time: 02:30 PM To 05:00 PM**

- Instructions:**
1. All questions are compulsory
 2. Assume suitable data wherever necessary and mention it boldly
 3. Draw neat labelled diagrams wherever necessary
 4. Figures to the right indicate full marks
 5. Use of Scientific calculator is allowed

Q1) Multiple Choice Questions**[14]**

1. **The transition between continuous values of the image function and its digital equivalent is called [2]**
 - A. Quantization
 - B. Sampling
 - C. Rasterisation
 - D. None of the Mentioned
2. **If r be the gray level of the image before processing and s after processing then which expression defines the negative transformation, for the gray level in the range $[0, L-1]$? [2]**
 - A. $s = L - 1 - r$
 - B. $s = cr^c$, c and c are positive constants
 - C. $s = c \log(1 + r)$, c is a constant and $r \geq 0$
 - D. none of the mentioned
3. **Images quantized with insufficient brightness levels will lead to the occurrence of _____ [2]**
 - A. Pixillation
 - B. Blurring
 - C. False Contours
 - D. None of the Mentioned
4. **Which of the following is the role played by segmentation in image processing? [2]**
 - A. Deals with property in which images are subdivided successively into smaller regions
 - B. Deals with partitioning an image into its constituent parts or objects
 - C. Deals with extracting attributes that result in some quantitative information of interest

D. Deals with techniques for reducing the storage required to save an image, or the bandwidth required to transmit it.

5. Which of the following tool is used in tasks such as zooming, shrinking, rotating, etc.? [2]

- A. Filters
- B. Sampling
- C. Interpolation
- D. None of the Mentioned

6. Which of the following in an image can be removed by using a smoothing filter? [2]

- A. Sharp transitions of brightness levels
- B. Sharp transitions of gray levels
- C. Smooth transitions of gray levels
- D. Smooth transitions of brightness levels

7. What is the equation used to obtain I(Intensity) component of each RGB pixel in RGB color format? [2]

- A. $I=1/2(R+G+B)$
- B. $I=1/3(R+G+B)$
- C. $I=1/3(R-G-B)$
- D. $I=1/3(R-G+B)$

Q2) Answer any Two questions [14]

1. Describe Sampling and quantitation in a Digital image processing system. [7]
2. Explain negative and log transformation using small images. [7]
3. Explain fundamental steps in digital image processing. [7]

Q3) Answer any Two questions [14]

1. Illustrate with examples linear and nonlinear filters. [7]
2. Derive an expression for histogram equalization. [7]
3. List steps involved in image filtering in the frequency domain and explain high pass and low pass filters used for image filtering. [7]

Q4) Answer any Two questions [14]

1. Describe thresholding and its types. [7]
2. Explain the region growing. [7]

3. How to convert HSV images into RGB Image.

[7]**Q5) Answer any Two questions****[14]**

1. With a neat diagram explain the lossy predictive coding technique.
2. Using suitable small images explain dilation.
3. Explain the Boundary extraction algorithm.

[7]**[7]****[7]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (67818) DIGITAL IMAGE PROCESSING Part 4 SEM 8
2] (101) Bachelor of Engineering (84052) Image Processing Part 4 SEM 7
3] (1154) B.Tech. CBCS (83826) Image Processing Part 4 SEM 7