REV-01
BCA/03/07

2025/12

**SET A**

# BACHELOR OF COMPUTER APPLICATION (HONOURS)
## SEVENTH SEMESTER
## DIGITAL IMAGE PROCESSING
## BCA-705

[USE OMR FOR OBJECTIVE PART]

**Duration: 1.30 hrs.** **Full Marks: 35**

**Objective**

**Time: 15 min.** **Marks: 10**

*Choose the correct answer from the following:* *1X10=10*

1. Which of the following is not a component of an image processing system?
   a. Image acquisition
   b. Image display
   c. Image recognition
   d. Image watering

2. Image formation involves the combination of
   a. Illumination and reflection
   b. Sampling and quantization
   c. Storage and retrieval
   d. Filtering and enhancement

3. The smallest element of a digital image is called
   a. Pixel
   b. Bit
   c. Node
   d. Frame

4. Which of the following is the first step in digital image processing?
   a. Image enhancement
   b. Image acquisition
   c. Image restoration
   d. Image compression

5. Image enhancement in the spatial domain is performed directly on
   a. Frequency components of the image
   b. Pixel values of the image
   c. Fourier transform of the image
   d. Histogram equalization curve

6. Which of the following is a type of gray-level transformation?
   a. Log transformation
   b. Laplacian transformation
   c. Fourier transformation
   d. Gradient transformation

7. Histogram equalization is used to
   a. Reduce image size
   b. Enhance contrast of an image
   c. Remove noise from an image
   d. Blur the image

8. The main goal of image restoration is to:
   a. Improve visual appearance on
   b. Recover an image that has been degraded
   c. Enhance the contrast of an image
   d. Compress the image

9. The image degradation model can be expressed as:

a. $g(x, y) = f(x, y) + n(x, y)$

b. $g(x, y) = h(x, y) * f(x, y) + n(x, y)$

c. $g(x, y) = f(x, y) \times n(x, y)$

d. $g(x, y) = f(x, y) - n(x, y)$

10. Which of the following is a common noise model in image processing?

a. Gaussian noise

b. Poisson noise

c. Salt-and-pepper noise

d. All of the above

-- --- --

## Descriptive

**Time : 1 hrs. 15 min.** **Marks : 25**

*[ Answer question no.1 & any two (2) from the rest ]*

1. What are the **main components of an image processing system?** Explain the function of each component briefly. **2+3=5**

2. Discuss the various hardware and software components involved in an image processing system and explain how they work together to produce a processed image. **5+5=10**

3. Explain in detail the different types of gray-level transformations used for image enhancement in the spatial domain. Give suitable examples and diagrams. **5+5=10**

4. Discuss the various arithmetic and logic operations used in image enhancement. Explain how image addition, subtraction, and logical operators help improve image quality. **5+5=10**

5. Explain the image degradation/restoration model in detail with a neat diagram. Describe how degradation affects image quality and how restoration helps recover the original image. **5+5=10**

= = *** = =