

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**M.Sc - IV SEMESTER**

**SEMESTER EXAMINATION: APRIL 2023**

**(Examination conducted in May 2023)**

**CS0122 – Image Processing**

**(For current batch students only)**

**Time- 2 ½ hrs Max Marks-70**

**Part A**

**Answer all the questions. (15\*1=15)**

1. What is Digital image processing?
2. Define brightness.
3. What do you mean by Gray level?
4. A pixel p at coordinates (x, y) has neighbors whose coordinates are given by:  
   (x+1,y) ,(x-1,y) ,(x,y+1) ,(x,y-1) This set of pixels is called \_\_\_\_\_\_\_\_\_\_\_\_
5. Define pixel.
6. What is Hue?
7. What is saturation?
8. Define image Quantization.
9. Write importance of feature extraction.
10. Define Contrast
11. \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ are the categories of Image enhancement.
12. Define Image Restoration.
13. Define image segmentation.
14. What is image compression?
15. What is Region of Interest.

**Part B**

**Answer all 5 questions. (5\*5=25)**

1. Describe Fundamental steps in digital image processing

OR

Discuss the Sampling and Quantization with the diagram.

1. Analyse the Logical Operations on digital images with neat diagram.

OR

What is psuedocoloring? Describe Intensity slicing with neat diagram.

1. Describe Histogram equalization

OR

Expplain Gaussian noise and Impulse(Salt and pepper) noise models.

1. Explain erosion and dilation.

OR

Write a note on RGB color Model

1. Explain Contour Extraction technique.

OR

Compare and Contrast between Lossy and Lossless compression techniques

**Part C**

**Answer any three questions. (10\*3=30)**

1. a) Explain simple image formation model. (3 Marks)

b) Explain Neighboring of pixels(4 neighboring , 8 Neighboring and diagonal neighboring) (7 Marks)

1. a) How bit slicing helps in image size compression explain with bit slicing. (5 Marks)

b) Explain Power law transformation. (5 Marks)

1. a)Explain thinning morphological operation. (5 marks)

b)Explain How PCA is used to reduce the features. (5 Marks)

1. a) Analyse linear filter in terms of smoothening. (5 Marks)

b)Explain Haar Transform in wavelet transformation for image compression. (5 Marks)