

Subject Code: 2170308

Date: 19/11/2018

Subject Name: Biomedical Image Processing

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

- Q.1**
- (a) Explain Power Low transformation with example. 03
- (b) Explain different types of Image. 04
- (c) Explain Image Acquisition System with different Image Sampling method. 07

- Q.2**
- (a) Explain different types of Pixel Connectivity. 03
- (b) Explain Intensity slicing and Contrast stretching with example. 04
- (c) Following image has Salt and Pepper noise. Apply suitable filter to remove noise from image. 07

$$f(x, y) =$$

0	1	3	2
4	5	2	7
6	2	4	2
7	5	8	1

OR

- (c) Perform Histogram Equalization on given image, 07

$$f(x, y) =$$

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

- Q.3**
- (a) Write different High Pass filters mask in spatial domain. 03
- (b) Explain Canny Edge Detection. 04
- (c) Explain different types of Low pass filters in Frequency domain. Also write step to filter the image in Frequency domain. 07

OR

- Q.3**
- (a) Describe Opening of image with example. 03
- (b) Explain K-means algorithm for Image Segmentation. 04
- (c) Explain Linear Hough Transform in detail. 07

- Q.4**
- (a) Write applications of image processing in biomedical engineering. 03
- (b) Write steps for Global thresholding techniques. 04
- (c) Explain Arithmetic Coding for Image Compression. 07

OR

- Q.4**
- (a) Define Representation and Description of image. Enlist different types of Descriptors. 03
- (b) Explain Erosion and Dilatation of binary image with example. 04
- (c) Explain Lossy Image Compression in detail. 07

- Q.5**
- (a) Describe Fundamentals of Image Compression model. 03
- (b) Explain Hit or Miss Transform of image in Morphological Image Processing. 04
- (c) Write short note on Chain Code. 07

OR

- Q.5**
- (a) Describe Image Moments. 03
- (b) Explain High boost filtering of image. 04
- (c) Explain Region based Image Segmentation in detail. 07
