

## C7-R4: DIGITAL IMAGE PROCESSING & COMPUTER VISION

### NOTE :

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

**Time: 3 Hours**

**Total Marks: 100**

1.
  - (a) DO the human have stereo vision ?
  - (b) What is sampling in Image processing ?
  - (c) Why there are so many Color models like RGB, CMY, and HSV etc ?
  - (d) What do you mean by 8-Neighbourhood and why it is used ?
  - (e) Does JPEG image format stores the images in spatial domain or in frequency domain ?
  - (f) What do you mean by MRA ?
  - (g) Develop a high pass filter using a low pass filter.

**(7×4)**
  
2.
  - (a) What are the Gradient operators in Image processing ? Derive atleast one 2D gradient operator.
  - (b) How can we use histograms for image segmentation ?

**(9+9)**
  
3.
  - (a) What are LOG and DOG filter and why they are used ?
  - (b) Median filter can remove salt and pepper noise. Why ?

**(9+9)**
  
4.
  - (a) In image processing, the term Gaussian is discussed many times for various applications. What do you mean by Gaussian Function ? Can we use it to suppress Noise ?
  - (b) What is canny edge detector ? Why on canny detector has two thresholds ?

**(9+9)**

5. (a) Write a Pseudo code / algorithm or a code in C to display the histogram of a given data series.
- (b) What is Bit plane slicing technique in Image processing ?

**(9+9)**

6. (a) For what purpose the Robert & Sobel operators are used ?
- (b) Can we use Medial axis to represent a shape ? Justify your answer.

**(9+9)**

7. (a) Explain the basic principles of LZW encoding in brief.
- (b) Discuss the Opening and closing morphology operations and its uses in Image Processing.

**(9 + 9)**

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