Sl. No.

C7-R4 : DIGITAL IMAGE PROCESSING AND COMPUTER VISION

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

Total Time : 3 Hours **Total Marks : 100**

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1. (a) What is a digital image ?
 (b) What do you mean by dynamic range of an imaging system ?
 (c) What is a spatial domain and a transform domain ?
 (d) List the applications of color models.
 (e) State the convolution theorem for 1-D.
 (f) What is the need for compression ?
 (g) Define chain codes. What are the demerits of chain code ? **(7x4)**

2. (a) Explain the basic relationship between pixels.
 (b) Explain the simple image formation model.
 (c) Write down a summary of the steps for filtering in the frequency domain. **(6+6+6)**

3. (a) Explain the CMY Model.
 (b) Write a note on Harr transformation.
 (c) What is arithmetic coding ? Explain it with the help of an example. **(6+6+6)**

4. (a) Write a note on blockmatching motion estimation.
 (b) Explain the following terms with an example.
   (i) Opening
   (ii) Closing **(8+10)**

5. (a) Explain the application of fuzzy logic in pattern analysis.
 (b) Discuss the edge detection techniques. **(8+10)**

6. (a) Describe arithmetic mean filter, geometric mean filter , and harmonic mean filter.
 (b) Does the use of chain code compress the description information of an object contour ?
 (c) List the few measures used as simple descriptors in region descriptors. **(6+6+6)**

7. (a) Explain the JPEG compression technique.
 (b) What is computer vision ? State the applications of computer vision.
 (c) Explain the color segmentation process. **(6+6+6)**

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