(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0101   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B. Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION 2010-11

DIGITAL IMAGE PROCESSING

Time : 3 Hours   *Total Marks : 100*

Note :   Attempt any **five** questions. All questions carry equal marks. Assume missing data suitably, if any.

1.   Attempt any **four** parts of the following :   (5×4=20)

   (a)   Draw the block diagram of digital image processing.

   (b)   Can two monochromatic sources with different wavelengths can be perceived to have same colour ? Explain.

   (c)   Discuss the features of optimum mean square quantizer.

   (d)   Compare CCD and CMOS image sensors.

   (e)   Distinguish between sampling and quantization.

   (f)   Enumerate the main features of median filter.

2.   Attempt any **two** parts of the following :   (10×2=20)

   (a)   What do you mean by colour space ? Classify them and describe CMY colour model.

   (b)   How colour image filtering can be performed ? Draw their block diagram and explain.

   (c)   What do you mean by Gamma correction ? Draw the flow chart of Gamma correction and explain it.

Attempt any **two** parts of the following : **(10×2=20)**

(a) What do you mean by Histogram ? Explain histogram equalization. If the pixels of an image is shuffled, will there be any charge in the Histogram of image ? Justify your answer.

(b) What do you mean by Image Restoration ? Classify the Image Restoration Techniques. A photogram is taken from a vehicle running at a speed of 100 km/hour. Is it possible to use a Wiener or inverse filter to restore the blurring of the image ?

(c) What do you mean by image segmentation ? What are different approaches for image segmentation ? What are different methods for edge detection ? Explain at least one method.

Attempt any **two** parts of the following : **(10×2=20)**

(a) Draw the block diagram of object recognition system and classify the object recognition systems. Discuss non-parametric method of object recognition.

(b) Compare Template matching and Statistical method for image recognition. Explain any one method for image classification/recognitions.

(c) Describe the techniques of edge and line detection.

5. Write short notes on any **four** of the following : **(5×4=20)**

(a) Feature Extraction

(b) Unsupervised Classification

(c) Object Recognition

(d) Decision Trees

(e) Graph Matching

(f) Composite Filters.