

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

PAPER ID : 0101

Roll No.

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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 change 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.

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.