M.Tech. Computer Science & Engineering (CBCS Pattern) Semester - II
PCSS23 - Advanced Digital Image Processing

P. Pages : 1

Time : Three Hours

GUG/S/23/10994

Max. Marks : 70

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Notes :
1. All questions carry equal marks.
2. Attempt **any five** questions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) What is Digital Image Processing? Describe various components of Image Processing System. **7**

b) Explain the following Mathematical tools in Digital Image Processing. **7**
   i) Spatial operations.   ii) Vector and matrix operations.

2. a) Differentiate between Histogram equalization and histogram processing with neat sketches. **7**

b) Explain how ideal high pass filters are used for image sharpening using frequency domain filters. **7**

3. a) Explain inverse filtering technique for image restoration. **7**

b) Explain the correspondence between filtering in the spatial domain and frequency domain. **7**

4. a) Explain the following terms with relation to Image Expression. **8**
   i) Coding redundancy.   ii) Spatial and temporal redundancy.
   iii) Irrelevant information.

b) Explain region splitting and merging segmentation technique. **6**

5. a) Explain boundary descriptors based on shaped numbers. **8**

b) Explain regional descriptors based on Texture. **6**

6. a) Explain the following representation approaches. **8**
   i) Chain codes.   ii) Polygonal approximations.

b) Explain segmentation using morphological watersheds. **6**

7. a) Describe Fast Wavelet Transforms (FWT). **6**

b) Explain matching method of object recognition. **8**

8. Write short notes on **any two**. **14**
   a) Colour fundamentals in Image processing.
   b) Use of motion in segmentation.
   c) Digital Image Watermarking.

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