Hall Ticket Number:

Code No.: 9203M

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.Tech. I Year (CSE) II-Semester (Make Up) Examinations, Sept./Oct.- 2015

Image Processing

Time: **3** hours Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 X 2=20 Marks)

1. What is the electro magnatic spectrum and its applications in image processing?
2. Explain radiance, luminance and brightness.
3. What is the 2D-Discrete Fourier transform pair?
4. Calculate the convolution of I=[1 0 1 2] and W=[1 0 1 1].
5. What are the piece-wise linear transformation techniques?
6. What are the different image segmentation techniques?
7. Define fidility criteria.
8. What are the different types of redundancies present in the image?
9. What are the different noise models?
10. What is minimum mean square error filtering?

Part-B (5X10=50 Marks)
(All bits carry equal marks)

11. a) Explain the sampling and quantization with the help of a diagram.
    b) Explain four basic relationships between pixels.

12. a) Explain the properties of 2D-Discrete Fourier transform.
    b) What is the 2D-DFT linear separable transformation matrix and derive?

13. a) Explain the point and region dependent techniques of image segmentation.
    b) Explain image smoothing and image sharpening.

14. a) Why KL transform is termed as an optimal transform?
    b) Give some applications of Power-law transform.

15. a) What is Least mean square error filtering?
    b) Explain Geometric Mean filter.

16. a) Describe the steps involved in digital image processing.
    b) What is the Walsh-Hadamard transformation? Give its applications.

17. Write short notes on any **two** of the following:
    a) Point and edge detection techniques
    b) Huffman encoding
    c) Recursive filters

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