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Code No.: 5126 M

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. I Year (ECE) I-Semester (Make Up) Examinations, March-2016
(Communication Engineering & Signal Processing)

Image and Video 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. Explain the basic relationship between the pixels in a Digital Image.
2. Define 2-D Fourier transform pair.
3. Explain the contrast stretching operation of an image.
4. Mention three to four applications of edge detection.
5. Define image redundancy and list the types of redundancies.
6. List the various JPEG standards.
7. Write about the important features of digital video.
8. Classify the three dimensional motion models.
9. Explain pixel based motion estimation, in brief.
10. What is meant by mesh based motion estimation?

Part-B (5 X 10=50 Marks)
(All bits carry equal marks)

11. a) Explain Sampling and Quantization of an Image with suitable diagrams.
b) Show that, the 2D-DCT of an image can be computed by row and column passes with a 1D DCT Algorithm.
12. a) Describe the image sharpening methods in Frequency domain.
b) Discuss about different edge detection methods, in detail.
13. a) What is error free compression? Explain about run length coding using an example.
b) Generate Huffman code for the symbols shown in the following table, also calculate entropy:

Symbol	A1	A2	A3	A4	A5	A6
probability	0.1	0.4	0.06	0.1	0.04	0.3

14. a) Discuss about the Geometric image formation model.
b) Differentiate between analog and digital video processing.
15. a) Explain about the block based transform coding, in detail.
b) Discuss the applications of motion estimation in video coding.
16. a) Describe the various applications of image processing.
b) Explain about region based segmentation.
17. Write short notes on any two of the following:
a) Lossy and lossless Image Compression techniques.
b) Photometric image formation.
c) Multi resolution photo estimation.
