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M.Tech II Semester Supplementary Examinations February 2018

IMAGE & VIDEO PROCESSING

(Common to DSCE, DECS, ECE & Com Sys)
(For students admitted in 2012, 2013, 2014, 2015 & 2016 only)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions All questions carry equal marks

- The image f(x,y) = 4 cos(4πx) cos (6πy) is sampled with Δx = Δy = 0.1. The sampled image is reconstructed with an ideal low pass filter with cut off frequencies of ±1/2 Δx and ±1/2 Δy. Find the reconstructed image.
- 2 State and prove following properties of 2D-DFT:
 - (i) Translation.
 - (ii) Periodicity.
 - (iii) Conjugate symmetry.
- 3 Suppose that you form a low pass spatial filter that averages the 4-neighbors of point (x, y), but excludes the point (x, y) itself.
 - (i) Find the equivalent filter H(u, v) in the frequency domain.
 - (ii) Show that your result is a low pass filter.
- 4 (a) Explain the concept of image degradation model.
 - (b) Discuss the concept of wiener filtering.
- 5 Discuss different types of clustering techniques related to image segmentation.
- 6 (a) Discuss different types of image redundancies.
 - (b) Discuss about image fidelity criterion.
- 7 Formulate the Shannon Fano code for the word DADDY.
- 8 Discuss about sampling of video signals.

