Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14EC3071** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DIGITAL IMAGE PROCESSING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Discuss the use of grey level transformations in digital image enhancement with examples. | CO1 | 15 |
| b. | List out the real time applications of image processing. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Outline the fundamental steps involved in image processing and explain it with an example. | CO1 | 15 |
| b. | Explain the steps involved in designing a spatial domain image enhancement filter. | CO1 | 5 |
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| 3. | a. | Illustrate the use of histogram in defining the quality of the images and also enumerate the procedures involved in improving the quality. | CO1 | 15 |
|  | b. | Estimate the transfer function of 2nd order Butterworth Low pass filter for Do value of 15 and D (u,v) values of 10, 20 and 30. Plot the graph between H(u,v) and D(u,v). | CO1 | 5 |
| (OR) | | | | |
| 4. |  | Analyze the performance of frequency domain smoothening and sharpening filters for image processing. | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Summarize the concepts of color image processing. | CO2 | 10 |
|  | b. | Express the advantage of homomorphic filtering with necessary equations. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Comment briefly on the various noise probability density functions used in the image restoration process. | CO2 | 15 |
|  | b. | Describe the image restoration/degradation model. | CO2 | 5 |
|  |  |  |  |  |
| 7. | a. | Indicate the types of mean filters used for image restoration. | CO2 | 5 |
|  | b. | Compare the wiener and inverse filtering process for restoring the original image from the noise corrupted image. | CO3 | 15 |
| (OR) | | | | |
| 8. |  | Explain the following morphological operators in detail:  i. Erosion, ii. Dilation, iii. Opening, iv. Closing and v. Thinning | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Review the various thresholding concepts used in digital image processing techniques. | CO3 | 10 |
|  | b. | Explain the segmentation process and its need with a real time example. | CO3 | 10 |

ALL THE BEST