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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **16EC2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FUNDAMENTALS OF 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 applications of digital image processing with suitable examples. | CO1 | 12 |
| b. | Draw the anatomical structure of human eye and mark the parts. | CO1 | 8 |
| (OR) | | | | |
| 2. |  | Explain the basic intensity gray level transformations available for digital image enhancement with mathematical equations. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Explain the basic steps involved in processing digital images with neat block diagram. | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | What is the significance of image enhancement? Explain the procedure involved in spatial domain filtering. | CO2 | 12 |
| b. | Define histogram and show how it can be used to improve the image contrast. | CO2 | 8 |
|  |  |  |  |  |
| 5. | a. | Estimate the transfer function of 1st order Butterworth high 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). | CO2 | 10 |
| b. | Summarize the operation of homomorphic filtering process with a block diagram. | CO2 | 10 |
| (OR) | | | | |
| 6. |  | Write the various noise probability functions for noise models used in digital image processing. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Explain the three principal ways of estimating the degradation function for use in image restoration. | CO3 | 15 |
| b. | What do you mean by pseudo color image processing? | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | Encode the following data A={a,b,c,d,e,f} with probabilities (0.4, 0.1, 0.1 , 0.3 , 0.04 , 0.06) respectively using Huffman coding. | CO3 | 15 |
| b. | List the image compression formats and standards. | CO3 | 5 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Comment on the various morphological operations available for processing the digital images. | CO3 | 15 |
| b | How thresholding concept is utilized in segmentation of digital images? | CO3 | 5 |