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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14EC2062** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MACHINE LEARNING ALGORITHMS FOR 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. | Explain the functions of the different blocks of a pattern recognition system. | CO1 | 10 |
| b. | Illustrate the significance of training and learning in pattern recognition systems with graphical sketches. | CO3 | 10 |
| **(OR)** | | | | |
| 2. | a. | “Feature extraction is the backbone of any pattern recognition system”. Justify this satatement. | CO1 | 10 |
| b. | Compare and contrast StatPR, SyntPR and NeurPR. | CO3 | 10 |
|  |  |  |  |  |
| 3. |  | Summarize the concepts of discriminant functions with mathematical equations. Support your answer with graphical illustrations. | CO1 | 20 |
| **(OR)** | | | | |
| 4. |  | Elaborate on the performance measures of classifiers, risks and errors associated with the classification process. | CO3 | 20 |
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| 5. | a. | Explain the Maximum Likelihood (ML) method of pattern recognition with mathematical equations. | CO2 | 15 |
| b. | Distinguish between supervised and unsupervised learning methodologies. | CO3 | 5 |
| **(OR)** | | | | |
| 6. |  | Illustrate the Bayesian estimation approach for pattern classification with necessary mathematical equations. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Formulate the procedure of k-NN nonparametric estimation classifier with necessary equations. | CO2 | 15 |
| b. | Distinguish between linear discriminant functions and Fisher’s linear discriminant functions. | CO3 | 5 |
| **(OR)** | | | | |
| 8. | a. | Formulate the classification procedure for discrete feature data with mathematical equations. | CO1 | 10 |
| b. | Explain the Nearest Neighbour algorithm used for direct classification of binary data. | CO1 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Develop a neural network based pattern classification system for classifying 4 classes of numerical data. Outline the procedure of pattern recognition using support vector machine. | CO2 | 20 |