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



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

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| **Code** | **: 14CS2013** | **Duration :** | **3hrs** |
| **Sub. Name** | **:** **MACHINE LEARNING PRINCIPLES AND**  **APPLICATIONS** | **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, how classification problem is learnt from examples. | CO1 | 10 |
| b. | Illustrate with example regression analysis. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Discuss about parametric classification and explain how Baye’s rule is used for the purpose. | CO2  CO3 | 10 |
| b. | Explain about the Maximum likelihood estimation. | CO3 | 10 |
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| 3. | a. | With necessary equations explain about linear discriminants analysis and how it is useful for dimensionality reduction. | CO5 | 10 |
| b. | Discuss about Hierarchical clustering. | CO4 | 10 |
| **(OR)** | | | | |
| 4. | a. | Write the K means clustering algorithm and explain its steps. | CO4 | 10 |
| b. | List the various non parametric density estimators and explain how densities are estimated. | CO3 | 10 |
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| 5. | a. | Construct the classification tree. | CO2 | 10 |
| b. | Write the steps of perceptron training algorithm and explain it. | CO5 | 10 |
| **(OR)** | | | | |
| 6. | a. | Use Linear Discriminants to the classification problem and explain how classification is done. | CO5 | 10 |
| b. | Explain the Backpropogation algorithm. | CO5 | 10 |
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| 7. | a. | Explain the online K means clustering algorithm. State its draw back and explain how it is overcome in Adaptive Resonance Theory and in Self Organizing Map techniques. | CO4 | 10 |
| b. | Explain the Bayesian estimation of the parameters of a Gaussian distribution in the univariate case. | CO3 | 10 |
| **(OR)** | | | | |
| 8. | a. | Describe how Kernel machines can be used for the regression problem. | CO3 | 10 |
| b. | Discuss the evaluation problem of the Hidden Markov Model. | CO4 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain in detail about the strategies used in Reinforcement Learning. | CO6 | 10 |
|  | b. | Discuss about the model combination schemes. | CO5 | 10 |