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



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

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| **Code :** | **18CS3059** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MACHINE LEARNING** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Define machine learning. Mention its application in various fields. | CO1 | 8 |
| b. | Consider a scenario “If a face image of 100\*100, written in row-major, this is a 10,000 dimensional vector. If we shift the image one pixel to the right, this will be a very different vector in the 10,000-dimensional space.” Suggest the methods to rebuild the face recognizers robust to such distortions. | CO2 | 8 |
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| 2. | a. | Elaborate the linear regression model with a example. | CO1 | 8 |
| b. | Describe k-nearest neighbor algorithm and explain why is it called instance based learning? | CO2 | 8 |
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| 3. | a. | Discuss the steps involved learning and classifying text using navies bayes. | CO3 | 8 |
| b. | Write short notes on the following ensemble learning methodologies   1. Boosting 2. Bagging 3. Random forest | CO2 | 8 |
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| 4. |  | Explain the working of support vector machine in identifying the right hyper-plane to segregate the multiple classes. | CO2 | 16 |
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| 5. | a. | Illustrate the steps involved in self organizing map for classifying the input. | CO3 | 8 |
| b. | Use a decision tree to classify the students in your class based on their grades. | CO3 | 8 |
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| 6. | a. | Discuss any two application that uses principal component analysis for dimensionality reduction. | CO4 | 8 |
| b. | Demonstrate how independent component analysis technique is used in dimensionality reduction. | CO4 | 8 |
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| 7. | a. | Apply K-Means algorithm on a given data for k=2.Use C1(2,4) & C2(6,3) as initial clusters.  Data: a(2,4),b(3,3),c(5,5),d(6,3),e(4,3),f(6,6). | CO2 | 8 |
| b. | Evaluate the various techniques involved clustering the high dimension data. | CO5 | 8 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Explain reinforcement learning with the various elements involved in forming the concept. Define partially observable state. | CO6 | 10 |
| b. | Discuss various kernels of Gaussian processes in Bayesian estimation. | CO6 | 10 |