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



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

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| **Code :** | **18BM3015** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MACHINE LEARNING** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Differentiate between Supervised and Unsupervised learning with examples. | CO1 | 6 |
| b. | Give a decision tree to represent the following booloean function  i) A&&~B ii) A V (B&&C) iii) A XOR B  iv) (A&&B) V (C&&D) | CO1 | 10 |
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| 2. | a. | One of the main problem inherent in statistics with more than one or two variables is the issue of visualizing and interpreting data. Suggest a suitable method for reducing the number of variables. | CO2 | 8 |
| b. | Given a set of data points, use a suitable clustering algorithm to classify each data point into a specific group.  Data points that are in the same group should have similar properties and/or features, while data points in different groups should have highly dissimilar properties. | CO2 | 8 |
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| 3. | a. | IIustrate the boosting and bagging algorithms with an example for each. | CO3 | 8 |
| b. | Compare the features of various machine learning techniques. | CO3 | 8 |
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| 4. | a. | Explain the feature selection steps in an optimization problem. | CO4 | 8 |
| b. | Choose a Deep neural network with its training procedure based on hidden layer and its efficiency. | CO4 | 8 |
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| 5. | a. | Consider a medical diagnosis problem in which there are two alternative hypotheses:  i) That the patient has a particular form of cancer (+)  ii) That the patient does not (-). A patient takes a lab test and the result comes back poslliyg, The test returns a correct positive result in only 98% of the cases in which the disease is actually present, and a correct negative result in only 97% of the cases in which the disease is not present.  Furthermore, 0.008 of the entire population have this cancer. Determine whether the patient has cancer or not using MAP hypothesis. | CO5 | 10 |
| b. | Differentiate between supervised and reinforced network. | CO5 | 6 |
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| 6. |  | Explain the linear models of support vector machines. | CO1 | 16 |
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| 7. |  | Write about graphical models in machine learning. | CO5 | 16 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Summarize the various models of IoMT and its application. | CO6 | 10 |
| b. | Write about various learning techniques of machine learning. | CO6 | 10 |