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



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

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **18CS3009** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED MACHINE LEARNING** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | List the advantages of using parametric based approaches in statistical analysis. | CO1 | 6 |
| b. | Discuss in detail about the parametric based approaches used in classification and regression. | CO2 | 10 |
|  |  |  |  |  |
| 2. | a. | Construct a decision tree for the following example.  A property owner is faced with a choice of a large-scale investment to improve her flats. This could produce a substantial pay-off in terms of increased revenue net of costs but will require an investment of £1,400,000. After extensive market research it is considered that there is a 40% chance that a pay-off of £2,500,000 will be obtained, but there is a 60% chance that it will be only £800,000. | CO3 | 10 |
| b. | Write the algorithm for building regression tree in statistical analysis and discuss it’s working with simple example. | CO4 | 6 |
|  |  |  |  |  |
| 3. | a. | Outline the similarities and differences between spectral clustering and bi-clustering. | CO2 | 10 |
| b. | List the advantages and disadvantages of having locally adaptive distances in hierarchical clustering. Illustrate the steps involved in the usage of locally adaptive distances in hierarchical clustering. | CO3 | 6 |
|  |  |  |  |  |
| 4. | a. | Briefly describe the various kernel methods available for non linear data. | CO4 | 6 |
| b. | Differentiate between sparse kernel machine and non-sparse kernel machine. Explain how SVM can be applied to classification problem with examples. | CO3 | 10 |
|  |  |  |  |  |
| 5. | a. | Describe the various canonical cases for conditional Independence. | CO2 | 10 |
| b. | Explain the graphical model for Naïve Bayes classifier with neat diagram. | CO3 | 6 |
|  |  |  |  |  |
| 6. | a. | Discuss in detail about the various functionalities of Feed forward Neural network. | CO2 | 10 |
| b. | Outline the importance of EM algorithm in statistical analysis. | CO2 | 6 |
|  |  |  |  |  |
| 7. |  | Explain how a computational intelligence problem can be resolved by building multiple model using Ensemble learning. | CO4 | 16 |
|  | | | | |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Illustrate the real time application of deep belief network in health care. | CO5 | 8 |
| b. | Design a model illustrating the working principle of Boltzmann machine to solve difficult combinatoric problems. | CO6 | 12 |