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



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

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
|  |  | **PART A (5 X 16= 80 MARKS)**  **(Answer any five from the following)** |  |  |
| 1. | a. | Describe the types of machine learning models and give one use case for any one of the machine learning model. | CO1 | 10 |
| b. | Compare the work of neuron with brain. | CO2 | 6 |
| 2. |  | Analyse the better season for playing golf game using ID3 Decision tree algorithm with the given labeled data set.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Day** | **Outlook** | **Temperature** | **Humidity** | **Wind** | **Play Golf** | | D1 | Sunny | Hot | High | Weak | No | | D2 | Sunny | Hot | High | Strong | No | | D3 | Overcast | Hot | High | Weak | Yes | | D4 | Rain | Mild | High | Weak | Yes | | D5 | Rain | Cool | Normal | Weak | Yes | | D6 | Rain | Cool | Normal | Strong | No | | D7 | Overcast | Cool | Normal | Strong | Yes | | D8 | Sunny | Mild | High | Weak | No | | D9 | Sunny | Cool | Normal | Weak | Yes | | D10 | Rain | Mild | Normal | Weak | Yes | | D11 | Sunny | Mild | Normal | Strong | Yes | | D12 | Overcast | Mild | High | Strong | Yes | | D13 | Overcast | Hot | Normal | Weak | Yes | | D14 | Rain | Mild | High | Strong | No | | CO4 | 16 |
| 3. |  | Define the single layer perceptron with the different activation functions in a supervised learning with the necessary diagram and write the basic learning rule for single perceptron with the necessary equations. | CO1 | 16 |
| 4. | a. | Classify the given set of data into two clusters by using K-means algorithm.  Data = { 2, 3, 4, 7, 8, 10, 11, 12, 13, 15, 17, 18, 22, 25, 27 } | CO2 | 6 |
|  | b. | Demonstrate the role of learning vector quantization (LVQ) algorithm in the classification problems. | CO3 | 10 |
| 5. |  | What is Principal component analysis? Explain how the dimensionality reduction can be done using Principal component analysis with the necessary steps. | CO5 | 16 |
| 6. |  | Discuss the Hierarchical method in a machine learning and explain the steps involved in hierarchical agglomerative clustering/ radial basis function. | CO2 | 16 |
| 7. |  | Estimate the chance of purchasing computers using candidate elimination algorithm.  **Data Set :**  **Rec Age Income Student Credit\_rating Buy**  R1 <=30 High No Fair No  R2 <=30 High No Excellent No  R3 31 to 40 High No Fair Yes  R4 >40 Medium No Fair Yes  R5 >40 Low Yes Fair Yes  R6 >40 Low Yes Excellent No  R7 31 to 40 Low Yes Excellent Yes  R8 <=30 Medium No Fair No  R9 <=30 Low Yes Fair Yes  R10 >40 Medium Yes Fair Yes  R11 <=30 Medium Yes Excellent Yes  R12 31 to 40 Medium No Excellent Yes  R13 31 to 40 High Yes Fair Yes  R14 >40 Medium No Excellent No | CO5 | 16 |
|  | | **PART B (1 X 20= 20 MARKS)** |  |  |
| 8. |  | Demonstrate the elements of reinforcement learning with a suitable example. | CO2 | 20 |