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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May– 2017**

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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. | What are the applications of machine learning in different fields? | CO1 | 15 |
| b. | Differentiate Supervised and Unsupervised learning with examples. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Illustrate the use of Bayesian theory for classification. | CO2 | 10 |
| b. | What are Association rules? Write a note on the frequently used measures in learning association rules. | CO2 | 10 |
| 3. |  | Consider a database D (figure). Suppose the minimum support count required is two. Find out the frequent item set using Apriori algorithm. | CO3 | 20 |
| (OR) | | | | |
| 4. |  | Mention the procedures used to fine tune model complexity and explain each one with an example. | CO2 | 20 |
| 5. | a. | Illustrate the k-means clustering algorithm with any classical example using the equations to minimize the total reconstruction error. | CO4 | 10 |
| b. | Elaborate on the Hierarchical Clustering Method and write down the methods used to calculate the distance between clusters with equations. | CO4 | 10 |
| (OR) | | | | |
| 6. | a. | Differentiate between multivariate and univariate tree. | CO5 | 5 |
|  | b. | With relevant equations, explain how a decision tree is used for classification and regression. | CO5 | 15 |
| 7. |  | What is a perceptron? Explain the steps involved in training a multilayer perceptron. | CO4 | 20 |
| (OR) | | | | |
| 8. | a. | Derive the Gradient descent learning rule. | CO4 | 5 |
|  | b. | What is Back Propagation Algorithm? Explain how it is used as a classifier. | CO4 | 15 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Bring out the differences between Hidden Markov model and Discrete Markov Model with example. | CO6 | 15 |
|  | b. | What is the function of Kernel Machines? | CO6 | 5 |

ALL THE BEST