

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Summer 2021 - 22 Examination**

**Semester: 8****Subject Code: 203105481****Subject Name: Machine Learning****Date: 30/03/2022****Time: 10:30 am to 01:00 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions****(15)**

1. Which is a subset of Machine Learning?  
A) Artificial Intelligence                      B) Deep Learning  
C) Data Mining                                      D) None of the above
2. If output of any machine learning model involves target variable, then that model is known as?  
A) Descriptive Model                              B) Predictive Model  
C) Reinforcement Model                              D) All of the above
3. The problem of finding hidden structure in unlabeled dataset is known as?  
A) Supervised Learning                              B) Unsupervised Learning  
C) Reinforcement Learning                              D) None of the above
4. Which of the following is not a Supervised Learning?  
A) Naïve Bayesian                                      B) PCA  
C) Linear Regression                                      D) Decision Tree
5. What is the disadvantage of decision tree?  
A) Factor Analysis                                      B) Robust to outliers  
C) Prone to be overfit                                      D) None of the above
6. In PCA, the number of input dimensions are equal to principal components: True or False?
7. Real-Time decisions, AI, Gaming, Robot navigation are applications of \_\_\_\_\_ learning?
8. \_\_\_\_\_ is a widely used and effective machine learning algorithm based on the idea of bagging?
9. Machine learning algorithms build on a model based on sample data known as \_\_\_\_\_?
10. \_\_\_\_\_ layer is there in between Input and Output layer in a Simple Neural Network Architecture?
11. Full name of ID3 algorithm is \_\_\_\_\_
12. \_\_\_\_\_ algorithms are used if there is a relationship between the Input and Output variable
13. SVM is used as a \_\_\_\_\_
14. \_\_\_\_\_ data is used for testing accuracy of your neural network model?
15. \_\_\_\_\_ techniques use a combination of learning algorithms to optimize better predictive performance

**Q.2 Answer the following questions. (Attempt any three)****(15)**

- A) Differentiate AI, ML and Deep Learning with suitable example of each
- B) Differentiate Supervised, Unsupervised and Reinforcement Learning with suitable example
- C) Explain issues of Machine Learning in detail
- D) How will you design a Learning System? Explain with example

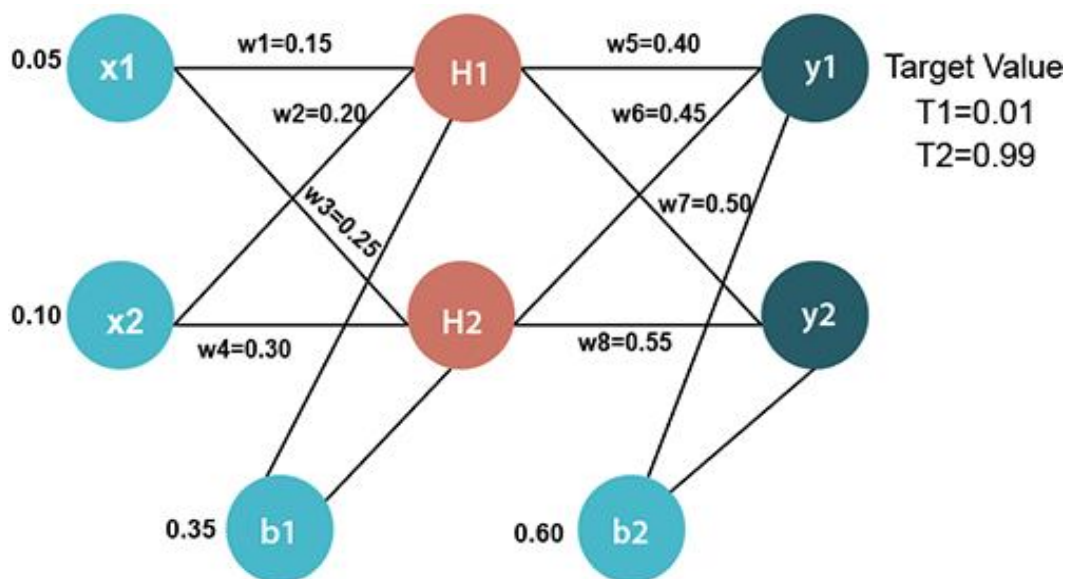
**Q.3 A) What is Fuzzy Logic? Explain Fuzzy Rule based System and Fuzzy Decision Making****(07)****B) Explain Naïve Bayes Algorithm with example****(08)****OR****B) What is KNN algorithm? How it will work? Explain Algorithm with example****(08)**

**Q.4** A) Consider following data-set based on which we will determine whether to play football or not. Which attribute would be decision tree building algorithm choose for the root of the tree and why? (Explain in detail with proper reasoning) (07)

Outlook	Temperature	Humidity	Wind	Played football(yes/no)
Sunny	Hot	High	Weak	No
Sunny	Hot	High	Strong	No
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	Weak	Yes
Rain	Cool	Normal	Strong	No
Overcast	Cool	Normal	Strong	Yes
Sunny	Mild	High	Weak	No
Sunny	Cool	Normal	Weak	Yes
Rain	Mild	Normal	Weak	Yes
Sunny	Mild	Normal	Strong	Yes
Overcast	Mild	High	Strong	Yes
Overcast	Hot	Normal	Weak	Yes
Rain	Mild	High	Strong	No

**OR**

A) For the following Neural Network, find out the Total Error which will be generated at the end of Forward-Pass (07)



B) Explain Ant Colony Optimization in Genetic Algorithms. How it will be useful in ML? (08)