



PAPER ID-410662

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Subject Code: KME074

Roll No:

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**B.Tech.**  
**(SEM VII) THEORY EXAMINATION 2021-22**  
**MACHINE LEARNING**

**Time: 3 Hours**

**Total Marks: 100**

**Note: 1. Attempt all Sections. If require any missing data; then choose suitably.**

**SECTION A**

- 1. Attempt all questions in brief. 2 x 10 = 20**
- Define Machine learning and its application.
  - Define the big data & its role in Machine learning.
  - Discuss the meaning of data mining.
  - Differentiate between Training data and Testing Data
  - Define the learning classifiers.
  - Describe the artificial intelligence (AI).
  - Describe the Artificial Neural Networks (ANN).
  - Discuss the weight and bias in ANN
  - What is meaning of Chromosome in genetic algorithm
  - What is the difference between reinforcement learning and Artificial Intelligence?

**SECTION B**

- 2. Attempt any three of the following: 10 x 3 = 30**
- Define the machine learning and its application in Mechanical Engineering.
  - Define the regression analysis and its types. explain in brief with suitable example.
  - What is Cluster Analysis in unsupervised learning?
  - Define the terms in decision trees, explain (i) Entropy, (ii) Information Gain, (iii) Gini index, (iv) Gain Ratio with their equation.
  - Discuss the steps of Genetic algorithm (GA) with a suitable example.

**SECTION C**

- 3. Attempt any one part of the following: 10 x 1 = 10**
- How machine learning works with Netflix, Facebook, and amazon websites.
  - Differentiate between Supervised, Unsupervised and Reinforcement machine Learning. explain with suitable examples.
- 4. Attempt any one part of the following: 10 x 1 = 10**
- How the Supervised learning works in Customer discovery in retail shopping? Write the steps.
  - Define the Bayesian Decision theory with suitable example.



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5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Draw the cluster of following 8 points into 3 clusters:

	Point							
	P1	P2	P3	P4	P5	P6	P7	P8
X	12	2	4	7	8	2	1	3
Y	10	9	11	8	8	7	5	4

Use the *K-means algorithm and Euclidean distance* and take the Initial cluster centers are P2 (2, 9), P4 (7, 8) & P8 (3,4). The solution up to two iterations.

(b) Use the *Nearest Neighbor clustering algorithm and Euclidean distance* to cluster the examples from the previous exercise: A1=(2,10), A2=(2,5), A3=(8,4), A4=(5,8), A5=(7,5), A6=(6,4), A7=(1,2), A8=(4,9). Suppose that the threshold t is 4.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Construct the decision tree for the given data set:

DAY	Outlook	Temperature	Humidity	Windy	Play Golf
D1	Rainy	Hot	High	Weak	No
D2	Rainy	Hot	High	strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Sunny	Mild	High	Weak	Yes
D5	Sunny	Cool	Normal	Weak	Yes

Calculate data set entropy and information gain.

(b) Explain Backpropagation algorithm in artificial neural network (ANN) with suitable example.

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Define the reinforcement learning & discuss its applications.
- (b) What are the applications of Genetic Algorithm in real world? Write in brief.

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