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GIET UNIVERSITY, GUNUPUR – 765022
M. Tech. (Third Semester) Examinations, December – 2023
MECPE3012 – Pattern Recognition and Machine Learning
(ECE)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**Answer ALL questions

	CO#	Blooms Level
a. Define training data and test data. Differentiate between them.	2	3
b. What do you mean by rationality of an agent?	2	3
c. Define elbow point in the context of clustering.	1	2
d. What are the different processes in data preparation?	2	1
e. Differentiate between insufficient data and non-representative data?	2	2
f. Draw and explain a perceptron.	2	2
g. How do classification and regression differ?	3	1
h. What do you understand by the Confusion Matrix?	3	2
i. Define entropy and information gain.	3	3
j. Differentiate between Random forest and Decision tree?	3	2

PART – B**(10 x 5 = 50 Marks)**Answer ANY FIVE questions

	Marks	CO#	Blooms Level
2. a. Write the different steps of machine learning.	5	1	2
b. What is the need of machine learning? Explain briefly.	5	2	1
3.a. Identify and discuss about challenges associated with machine learning.	5	2	1
b. Explain the different types of machine learning with suitable examples.	5	1	2
4. a. What is the need of data preprocessing and discuss about different preprocessing techniques.	5	2	2
b. What are the different types of data in machine learning? Discuss it in aspect of data transformation.	5	2	1
5.a. Discuss about bias-variance tradeoff.	5	3	1
b. List out the different steps involved in reinforcement learning.	5	2	1

6. a. The sales of a company (in million dollars) for each year are shown in the table below.

x (year)	2005	2006	2007	2008	2009			
y (sales)	12	19	29	37	45	5	3	2

- i. Find the least square regression line $y = a x + b$.
- ii. Use the least squares regression line as a model to estimate the sales of the company in 2012.

b. Explain the difference between KNN and K-means Clustering. 5 3 1

7.a. What is a Decision Tree? Explain it with an example. 5 3 1

b. Discuss about the steps involved in PCA. 5 3 1

8. a. What Are the Different Layers on CNN? 5 4 1

b. What are the different measures of spread in statistics? Discuss briefly. 5 4 2

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