

Code No: **R22A6602****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June 2025**Machine Learning****(CSE-AIML & B.Tech-AIML)**

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Time: 3 hours**Max. Marks: 60****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 10 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART-A (10 Marks)**(Write all answers of this part at one place)**

		BCLL	CO(s)	Marks
1	A Differentiate Machine Learning and Deep Learning.	L2	CO-I	[1M]
	B What is the significance of dimensionality reduction?	L2	CO-I	[1M]
	C What is information gain?	L1	CO-II	[1M]
	D What do you mean by support vector in SVM?	L1	CO-II	[1M]
	E What is artificial neural network?	L1	CO-III	[1M]
	F Which machine learning model is a more interpretable decision tree or Artificial Neural Network?	L2	CO-III	[1M]
	G What is underfitting?	L1	CO-IV	[1M]
	H What is boosting?	L1	CO-IV	[1M]
	I What do you mean by M step?	L1	CO-V	[1M]
	J What do you mean by environment in reinforcement learning?	L1	CO-V	[1M]

PART-B (50 Marks)**SECTION-I**

- | | | | | |
|----------|---|-----------|-------------|-------------|
| 2 | A What is PCA? How it works as dimensionality reduction technique? Explain with example. | L1 | CO-I | [5M] |
| | B Discuss embedded methods. | L2 | CO-I | [5M] |

OR

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|----------|--|-----------|-------------|-------------|
| 3 | A Differentiate all features selection methods. | L3 | CO-I | [5M] |
| | B Explain about min-max normalization. | L1 | CO-I | [5M] |

SECTION-II

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|----------|--|-----------|--------------|-------------|
| 4 | A Elucidate kernel SVM. | L3 | CO-II | [5M] |
| | B For the below given dataset use Naïve Baye's algorithm to classify the following sample instance (Color=' Green', Legs='2', Height='Tall', Smelly='No'):
Class label is Species being classified into two labels as:
Species = 'M'
Species = 'H' | L4 | CO-II | [5M] |

NO	COLOR	LEGS	HEIGHT	SMELLY	SPECIES
1	White	3	Short	Yes	M
2	Green	2	Tall	No	M
3	Green	3	Short	Yes	M
4	White	3	Short	Yes	M
5	Green	2	Short	No	H
6	White	2	Tall	No	H
7	White	2	Tall	No	H
8	White	2	Short	Yes	H

OR

- 5 A Discuss gradient descent algorithm. L2 CO-II [5M]
 B Use KNN algorithm to classify the instance: X= (Maths = 6, CS = 8) and K = 3 for the dataset given below with class label Result. L3 CO-II [5M]

S. NO.	MATHS	CS	RESULT
1	4	3	Fail
2	6	7	Pass
3	7	8	Pass
4	5	5	Fail
5	8	8	Pass

SECTION-III

- 6 Discuss ROC curves and confusion matrix. L2 CO-III [10M]

OR

- 7 A What is Perception? Explain Perception training with example. L1 CO-III [5M]
 B Explain back propagation algorithm. L2 CO-III [5M]

SECTION-IV

- 8 A Differentiate K-fold and stratified K-fold. L1 CO-IV [5M]
 B Explain about boosting algorithms. L2 CO-IV [5M]

OR

- 9 A Discuss bias-variance trade-off and how it affects the performance of a model. L2 CO-IV [5M]
 B Describe the random forest algorithm to improve classifier accuracy. L2 CO-IV [5M]

SECTION-V

- 10 A Use K Means clustering to cluster the following data into two groups. Assume cluster centroid are m1=2 and m2=4. The distance function used is Euclidean distance. { 2, 4, 10, 12, 3, 20, 30, 11, 25 } L4 CO-V [5M]
 B Discuss Markov decision processes. L2 CO-V [5M]

OR

- 11 A Write the algorithm for k-modes clustering. L2 CO-V [5M]
 B Explain the steps involved in expectation maximization algorithm. L2 CO-V [5M]
