Course Code: 23MC3T10

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

II – MCA I - Semester Regular/Supplementary Examinations (BR23), Jan - 2026

MACHINE LEARNING WITH PYTHON (MCA)

Time: 3 hours Max. Marks: 70

Answer any Five Questions One Question from One UNIT
ALL the Question Carry Equal Marks

	UNIT-I	**Marks**	**CO**	**BL**
1.a)	Explain the differences between supervised, unsupervised, and reinforcement learning with examples.	7M	C211.1	L2
b)	Describe the process of installing Python and how to install a package from the Python Package Index (PyPI).	7M	C211.1	L2
	OR			
2.a)	Compare and contrast the functionalities of NumPy, SciPy, matplotlib, and scikit-learn.	7M	C211.1	L2
b)	Write a Python script that demonstrates the use of matplotlib to plot a simple graph.	7M	C211.1	L2

	UNIT-II	**Marks**	**CO**	**BL**
3.a)	Define supervised learning and list its main types.	7M	C211.2	L1
b)	Explain how the k-Nearest Neighbours algorithm works with an example.	7M	C211.2	L2
	OR			
4.a)	Given a dataset, describe how you would use a regression model to predict a continuous outcome.	7M	C211.2	L2
b)	Compare the working mechanisms of Naive Bayes classifiers and decision trees.	7M	C211.2	L4

	UNIT-III	**Marks**	**CO**	**BL**
5.a)	List the steps involved in partitioning a dataset for training and testing.	7M	C211.3	L1
b)	Illustrate with an example how missing data can be imputed using statistical methods.	7M	C211.3	L2
	OR			
6.a)	Write a Python code snippet to split a dataset into training and testing sets.	7M	C211.3	L1
b)	Discuss the advantages and disadvantages of using random sampling versus stratified sampling when partitioning a dataset.	7M	C211.3	L6

	UNIT-IV	**Marks**	**CO**	**BL**
7.a)	What is majority voting in ensemble learning? Illustrate with an example how it can be used to combine predictions from multiple classifiers.	7M	C211.4	L1
b)	Explain the concept of bagging in ensemble learning. How does bootstrap sampling contribute to building robust models in this approach?	7M	C211.4	L2
	OR			
8.a)	What is adaptive boosting (AdaBoost)? Discuss how it combines weak learners to create a strong classifier.	7M	C211.4	L1
b)	Compare and contrast bagging and boosting as ensemble learning techniques. Discuss their respective advantages and limitations.	7M	C211.4	L4

	UNIT-V	Marks	CO	BL
9.a)	Explain the types of data commonly represented as strings in machine learning. Provide examples of their applications.	7M	C211.5	L2
b)	What is sentiment analysis? Describe how it can be applied to movie reviews, highlighting key steps in the process.	7M	C211.5	L1
	OR			
10.a)	Discuss the "Bag of Words" approach for representing text data. What are its advantages and limitations?	7M	C211.5	L6
b)	What are stop words? Explain their role in text preprocessing and their impact on text-based machine learning models.	7M	C211.5	L1

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