CLASS XI

SEMESTER I

THEORY

FULL MARKS – 20

(MCQ Type Question)

UNIT	Topic	No of periods assigned	Marks
1	Introduction to Python	2	2
2	Setting Up Python Development	2	1
3	Basic Python Syntax and Concepts	8	4
4	Writing and Executing Python Scripts	6	1
5	Control Structures	9	4
6	Functions and Modules	6	3
7	Data Structures	6	3
8	File Handling in Python	6	2
	Total	**45**	**20**

DETAIL SYLLABUS

Unit	Topic / Sub Topic	No. of periods assigned
1	1.1 Introduction to Python – Features of Python and Its Significance in AI/ML 1.2 Introduction to Python as a versatile programming language. 1.3 Overview of the role of Python in AI and ML.	2
2	2.1 Installing Python (latest version) and Anaconda distribution. 2.2 Setting up Jupyter Notebook for interactive coding.	2
3	3.1 Variables, Identifiers data types (numbers (integer, float), Boolean, string, list, tuple, dictionary). 3.2 Operators (Arithmetic, Assignment, Unary, Relational (Comparison), Logical, Bitwise, Membership, Identity). 3.3 Input and output using input () and print (). 3.4 Type Conversion	8
4	4.1 Creating and running Python scripts. 4.2 Understanding indentation and code blocks.	6

Unit	Topic / Sub Topic	No. of periods assigned
5	5.1 Decision Control Statements (if, else, elif, Nested If). 5.2 Loop Control Statements (for, while, Nested Loop). 5.3 Break, Continue and Pass statements. 5.4 else statement with Loop	9
6	6.1 Functions Definition, Function Call, Function parameters and return statements. 6.2 Organizing code into Modules. 6.3 The from…import statement. 6.4 Python built-in Modules and Namespaces	6
7	7.1 Lists: Creating, indexing, slicing, and modifying. 7.2 Tuples: Understanding immutability. 7.3 Dictionaries: Key-value pairs. 7.4 Sets: Unique elements and set operations.	6
8	8.1 Types of Files 8.2 Opening and closing Files 8.3 Reading and writing text files. 8.4 Handling exceptions with try-except blocks. 8.5 Context managers and the with statement.	6
	Total	**45**

SUBJECT: Introduction to AI/ML

CLASS XI

SEMESTER II

THEORY

FULL MARKS – 30

(SAQ AND LAQ Type Question)

UNIT	Topic	No of periods assigned	Marks
9	Introduction to NumPy	12	5
10	Exploring Pandas	12	4
11	Machine Learning Overview	15	8
12	Introduction to scikit-learn	12	5
13	Implementing Basic ML Algorithms	12	8
	Total	**63**	**30**

DETAIL SYLLABUS

Unit	Topic / Sub Topic	No. of periods assigned
9	9.1 NumPy arrays: Creating, indexing, and slicing. 9.2 Performing numerical operations with arrays. 9.3 Basic statistics with NumPy.	12
10	10.1 Introduction to Pandas data structures: Series and Data Frame. 10.2 Data manipulation with Pandas. 10.3 Data cleaning and preprocessing using Pandas.	12
11	11.1 Introduction to Artificial Intelligence, Definition of AI and its importance, Historical development, and milestones in AI Different types of AI systems (narrow AI vs. general AI), 11.2 Overview of Machine Learning and its types (supervised, unsupervised, reinforcement). 11.3 Neural Networks for Classification and Regression: Introduction to artificial neural networks (ANNs)	15
12	12.1 Installing and importing scikit-learn. 12.2 Data preprocessing: Handling missing data, encoding categorical features. 12.3 Splitting data into training and testing sets.	12
13	13.1 Linear regression for regression problems. 13.2 K-means clustering for unsupervised learning. 13.3 Model evaluation metrics (e.g., R- squared, Mean Squared Error).	12
	Total	**63**