COMPUTER SCIENCE (CLASS XII)

MONTH: MARCH

Content / Topic	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**
Unit 1 : Programming and Computational thinking **Chapter** : 1. Python Revision Tour 2. Python Revision Tour – II			**Chapter 1 : Python Revision Tour** • Tokens in Python • Barebones of a Python Program • Variables and assignments • Simple input and Output • Data Types • Mutable and Immutable types • Expressions • Statement Flow Control • The if Conditionals • Looping Statements • Jump Statements – break and Continue • More on Loops	**Chapter 2 : Python revision Tour -II** • Strings in Python • Lists in Python • Tuples in Python • Dictionaries in Python • Sorting Techniques
Learning Objectives	To enable Students to: • Learn the fundamentals of Python programming language. • Understand various sequences (ordered and unordered) and sorting techniques.			
Learning Outcomes	Students would be able to: • Understands various mutable and immutable data types. • Form logics using conditional and iterative statements • Understand and implement various ordered and unordered sequences in the programs.			
Assessment / Activity	• Theory assignments from chapter 1 • Revision test after completion of chapter 2			
Teaching Aids/ Resources	• Demonstration of selective construct and loops through various presentations and videos using digital / Smart Board • Demonstration of differences between list and tuples in the classroom using LCD projector			

MONTH: APRIL :

Content / Topic	**1st Week**	**3rd Week**	**3rd Week**	**4th Week /5th Week**
Unit 1 : Programming and Computational thinking **Chapter** : 3. Working with Functions 4. Using Python Libraries 5. File handling	**Chapter 3: Working with Functions** • Understanding Functions • Defining Functions in Python • Flow of Execution in a Function Call • Passing Parameters • Returning Values from functions	• Composition • Scope of Variables • Mutable/Immutable properties of passed data objects **Chapter 4: Using Python Libraries** • What is a Library • Importing Modules in a Python Program	• Using Python Standard Library's Functions and Modules • Creating a Python Library **Chapter 5 : File Handling** • Introduction • Data Files • Opening and Closing Files	• Reading and Writing Files • Standard Input, Output and Error Streams
Learning Objectives	To enable Students to: • Learn the Modularity feature of Python programming language using Functions • Understand Permanent Data storage using Files in Python.			
Learning Outcomes	Students would be able to: • Develop logics of the programs using modularity. • Design and code self-made libraries • Use programs to store data permanently through files.			
Assessment / Activity	• Theory assignments from chapter 4 • Revision test after completion of chapter 3 and 5			
Teaching Aids/ Resources	• Demonstration of functions through various presentations and videos using digital / Smart Board • Demonstration of files in the classroom using LCD projector			

MONTH: MAY

Content / Topic	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**
Unit 1 : Programming and Computational thinking **Chapter** : File Handling contd… 6. Recursion 7. Idea of Efficiency	• File handling revision and questions • Introduction to Projects **Chapter 6 : Recursion** • Introduction • How Recursion Works • Recursion in Python	• Recursion Vs. Iteration **Chapter 7 : Idea of Efficiency** • Introduction • What is Computational Complexity? • Estimating Complexity of Algorithms • Revision	**PT-I**	• Revision of Complete Syllabus • Board Questions Practice • Discussion of Projects
Learning Objectives	To enable Students to: • Understand the process of Recursive Functions in python. • Identify the difference between Recursion and Iteration. • Learn the concept of efficiency of Algorithms. • Understand the Projects to be made for Boards			
Learning Outcomes	Students would be able to : • Implement recursion in various Algorithms. • Develop efficient codes with faster algorithms and less resources.			
Assessment / Activity	Theory assignments from each chapter Class test after completion of chapters 6 and 7 Practical assignments on Chapter 6 and 7.			
Teaching Aids / Resources	➢ Coverage of Recursion using modules ➢ Demonstration of Efficient algorithms in the lab session using LCD projector			

MONTH: JULY

Content / Topic	**1st Week**	**2nd Week**	**3rd Week**	**4th & 5th Week**
Unit 1 : Programming and Computational thinking **Chapter** : 8. Data Visualization using Pyplot 9. Data Structures – I **10**. Data Structures - II	**Chapter 8 : Data Visualization using Pyplot** • Introduction • Using Pyplot of Matplotlib library • Customizing the Plot • Comparing Chart Types	**Chapter - 9: Data Structures – I** • Introduction • Elementary Data Representation • Different Data Structures • Operations on DS • Linear Lists	• Linear List Data Structures • Nested/Two Dimensional Lists in Python **Chapter 10 : Data Structures – II** • Introduction • Stacks	• Queues • Applications of Stacks • Applications of Queues • Revision and practice of Board questions
Learning Objectives	To enable Students to: • Learn the basic concepts of Data Visualization using Pyplot of Matplotlib. • Understand the concepts of data structures using Linear list, Stacks and Queues • Implement various applications of various data structures.			
Learning Outcomes	Student would be able to : • Customize the plot using Library. • Learn and implement NumPy Arrays • Differentiate and implement the types of charts viz. Pie, Bar, Scatter in various conditions. • Implement LIFO and FIFO principles in algorithms. • Debug he python program from syntax and logical errors.			
Assessment / Activity	• Theory assignments from each chapter • Class test after completion of chapters • Practical assignments on Chapter 8, 9 &10			
Teaching Aids / Resources	Demonstration of plotting steps in the classroom using digitally and in lab session using LCD projector			

MONTH: AUGUST

Content / Topic	1st Week	2nd Week	3rd Week	4th Week
Unit 2 : Computer Networks **Chapter :** **11**. Computer Networks – I **12**. Computer Networks – II **Unit 3** : Data Management - 2 **Chapter** : **13**. MySql SQL Revision Tour **14**. More on SQL	**PT- II** **Chapter 11: CN-I** • Introduction • Computer Networks – An Introduction • Types of Networks • Network Devices • The Cloud • Internet of Things (IoT)	**PT- II** **Chapter 12: CN - II** • Modulation Techniques • Collision in Wireless Networks • Error Checking • Main Idea of Routing • TCP/IP • Addresses on a Network • Cellular/Wireless Protocols • Basic Network Tools • Various Protocols • HTTP, Email • Secure Communication • Network Application	**Chapter 13 : MySQL Revision** • Relational Data Model • Accessing Database in MySQL • Creating Tables with or without constraints • Inserting Data in to Tables • Making Simple queries • Viewing table structure • Inserting Data in to another table • Modifying Data in tables • Deleting Data from Tables • Altering Tables • Dropping Tables	**Chapter 14: More on SQL** • Ordering records in result – Order by Clause • Aggregate functions • Types of SQL functions • Grouping Results – Group by
Learning Objectives	To enable Students to: • Understand types of Network • Learn about Cloud Computing and IoT. • Know Various protocols • Ordering records of a table • Grouping the Records in categories			
Learning Outcomes	Students would be able to: • Apply the concepts of Networks studied in practical working. • Add, Delete, Modify and Update data and fields in tables. • Implement order by and group by clause.			
Assessment / Activity	• Theory assignments from chapter 11 and 12 • Revision test after completion of chapter 13 and 14			
Teaching Aids / Resources	• Demonstration of Network Devices using digital / Smart Board • Demonstration of Queries in the classroom using digital boards and in lab sessions using LCD projector			

MONTH: SEPTEMBER

Content / Topic	1st Week	2nd Week	3rd Week	4th Week
Unit 3 : Data Management – 2 **Chapter :** 15. Creating a Django based Web application 16. Interface Python with MySQL **Unit 4 : Society, Law and Ethics (SLE-2)** **Chapter :** 17. Society, Law and Ethics	Distribution of Half Yearly Examination Answer Sheet and Solving of Queries / Doubts related to the same Revision if any topic, if required **Chapter 15 : Creating a Django based Web application** • Web Framework • Working of Web, Websites and web application • Introducing Django • Activating Virtual Environment • Django Basics and Project Structure • Steps to make Basic Django web app	• Creating models, views and templates • Writing Dictionary data to CSV and Text files • Processing Get and Post request **Chapter 16 : Interface Python with MySQL** • Connecting to MySQL • Parametrized Queries • Performing INSERT and UPDATE queries	**Chapter 17 : Society, Law and Ethics** • Ethical Issues • Open Source Philosophy and Software Licenses • Privacy • Online Fraud • Cybercrime • Computer Forensics • Cyber Law and IT act	• Technology and Society • E-waste management • Identity Theft • Gender Issues while Teaching/Using Computers • Disability issues while Teaching and Using Computers
Learning Objectives	To enable Students to: • Learn the concepts of Django. • Learn about the connectivity between MySQL and Python • Understand Cyber laws and precautions to be Safe Internet User.			
Learning Outcomes	Students would be able to: • Develop and design a Django based web application. • Write Dictionary data to CSV files • Create connection between MySQL and Python • Implement Cyber laws in daily online use. • Implement the various constraints on data using MYSQL			
Assessment / Activity	Theory and Practical assignments, Revision test after completion of the chapter			
Teaching Aids	Society, Law and Ethics presentation of concepts using LCD projector, Demonstration of algorithms in lab session			

MONTH: OCTOBER

Content / Topic	1st Week	2nd Week	3rd Week	4th Week
	Revision **Preboard - I**	**Revision** **Preboard - I**	**Revision** **Preboard - I**	**Revision** **Preboard - I**
Learning Objectives	To enable students to -- • Revise the syllabus in a systematic manner			
Learning Outcomes	Students would be able to recapitulate the concepts learnt earlier and practice their application.			
Assessment	Oral questions in the class, Programming assignments and Revision tests on completion of chapter			
Teaching Aids	Demonstration of difficult topics using Smart Board, Display of Sample programs using LCD projector			

MONTH: NOVEMBER

Content / Topic	1st Week	2nd Week	3rd Week	4th Week
Revision and Exams	• Revision • Class Test • Doubt Session • Practice of programming	• Revision • Class Test • Doubt Session • Practice of programming	• Revision • Class Test • Doubt Session • Practice of programming	• Revision • Class Test • Doubt Session • Practice of programming
Learning Objectives	To enable Students to: Learn and understand the studied topics well			
Learning Outcomes	Students would be able to: • Understand the way compilation process takes place in computer system. • Implements the concepts of cloud and parallel computing and cloud computing by understanding its advantage over traditional computing.			
Assessment / Activity	Theory and Practical assignments, Revision test after completion of chapter			
Teaching Aids / Resources	Illustrations on the Smart board, Lecture presentation of concepts using LCD projector, Demonstration of algorithms in lab session			

MONTH: DECEMBER

Content/Topic	1st – 2nd Week	3rd - 4th Week
Revision	**PRE-BOARD - II**	**PRE-BOARD - II**
Learning Objectives	**Clearing their doubts.**	
Learning Outcomes	**Students would be thorough with the revised topics.**	
Assessment/ Activity	Practice tests.	
Teaching Aids /Resources	Sample papers.	

MONTH: JANUARY

Content/Topic	1st Week	2nd Week	3rd Week	4th Week/ 5th Week
Revision	Distribution of Pre Board II answer sheets	Revision	Revision	Revision
Learning Objectives	To enable students to -- Revise the syllabus in a systematic manner			
Learning Outcomes	Students would be able to recapitulate the concepts learnt earlier and practice their application.			
Assessment / Activity	Oral question answer sessions, Revision assignments and tests including HOTS questions from CBSE papers			
Teaching Aids	Black board , display of Sample paper questions using LCD projector			

MONTH: FEBRUARY

Content/Topic	1st Week	2nd Week	3rd Week	4th Week
Revision	Revision of sample Papers	Practice tests and clearing the doubts	Revision	Revision
Learning Objectives	**Clearing their doubts.**			
Learning Outcomes	**Students would be thorough with the revised topics.**			
Assessment/ Activity	Practice tests.			
Teaching Aids/Resources	Sample papers.			