HAPPY DAYS SCHOOL
SYLLABUS BREAK UP FOR ACADEMIC YEAR 2024-2025

SUBJECT : COMPUTER SCIENCE **CLASS : XI**

DURATION	UNIT/CHAPTERS	PRACTICALS/PROJECTS	DAYS
JULY	**Unit I: Computer Systems and Organisation** **Basic Computer Organisation**: Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB) **Types of software**: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software **Operating system (OS):** functions of operating system, OS user interface	Identifying various components of Computer	17
	Unit I: Computer Systems and Organisation **Boolean logic:** NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits **Number system:** Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems. **Encoding schemes:** ASCII, ISCII and UNICODE (UTF8, UTF32) **Errors:** syntax errors, logical errors, runtime errors	Making logical gates and proving theorems Number Conversion Identifying characters in various encoding schemes	16

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AUGUST	**Unit II: Computational Thinking and Programming – 1** **Introduction to problem solving:** Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition **Familiarization with the basics of Python programming**: Introduction to Python, features of Python, executing a simple "hello world" program, **execution modes:** interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and R-value, use of comments **Knowledge of data types:** number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types **Operators:** arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in) **Expressions, statement, type conversion & input/output**: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output	Writing Algorithms for simple problems Launching and working with python IDLE Writing basic programs in python	20
	PRE MID TERM		
SEPTEMBER	**Unit II: Computational Thinking and Programming – 1** **Flow of control:** introduction, use of indentation, sequential flow, conditional and iterative flow control **Conditional statements**: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a **number Iterative statements**: for loop, range function, while loop, flowcharts, break and continue statements,	**Programs:** Generating pattern, summation of series, finding the factorial of a positive number etc String manipulations	25

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	nested loops **Strings:** introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, **built-in functions:** len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()		
OCTOBER	**MID TERM EXAMINATION**		
	Unit II: Computational Thinking and Programming – 1 **Lists:** introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists	**Programs:** finding the maximum, minimum, mean of numeric values Of elements in a list.	**15**
NOVEMBER	**Tuples:** introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple	**Programs:** finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a tuple	**13**
DECEMBER	**Dictionary:** introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(); **Unit II: Computational Thinking and Programming – 1** Introduction to Python modules: Importing module using 'import <module>' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean,	**Programs:** count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them Programs: Importing modules and Creating Modules in python	**25**

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	median, mode)		
JANUARY 2025	**Unit III: Society, Law and Ethics** **Digital Footprints** **Digital society and Netizen:** net etiquettes, communication etiquettes, social media etiquettes **Data protection**: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open-source software and licensing (Creative Commons, GPL and Apache) **Cyber-crime**: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime **Cyber safety:** safely browsing the web, identity protection, confidentiality, cyber trolls and bullying. **Safely accessing web sites:** malware, viruses, trojans, adware **E-waste management:** proper disposal of used electronic gadgets Indian Information Technology Act (IT Act) **Technology & Society:** Gender and disability issues while teaching and using computers	Understanding of Cyber laws and online ethics including safety measures to protect data and information available online	**24-8=16**
February 2025	**Thorough revision for Annual Examination**		

HEAD OF DEPARTMENT: _____ **School Principal:** _____

[Naveen Sharma] **[Anju Sharma]**

Subject Teachers:

1. **NAVEEN SHARMA**
2. **ATUL SHARMA**

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SUBJECT : COMPUTER SCIENCE **CLASS : XII**

PT	DURATION	UNIT/CHAPTERS	PRACTICALS/PROJECTS	Working Days
PERIODIC TEST - I	APRIL	**Unit I - Programming and Computation Thinking - 2** Revision of Python topics covered in class XI - Self Study **Functions:** types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)	Programs based on functions	21
	JUNE	**Exception Handling:** Exception Handling: Introduction, handling exceptions using try-except-finally blocks **Data File Handling:** Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths **Text file:** opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file	Programs based on text files	17
	JULY	**Binary file:** basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file	Programs based on binary files Project work introduction	25 PT 1

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PERIODIC TEST - II (MID TERM)	AUGUST	**CSV file:** import csv module, open / close csv file, write into a csv file using csv.writer() and read from a csv file using csv.reader( ) **Data Structure:** Stack, operations on stack (push & pop), implementation of stack using list.	Programs based on CSV files and Data Structure Project Synopsis Basics	23
		PRE MID TERM EXAM		
	SEPTEMBER	**Unit III: Database Management System** **Database concepts:** introduction to database concepts and its need Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key) **Structured Query Language:** introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table **Unit III: Database Management System** alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command	MySQL Queries Project Documentations Begins	20

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	OCTOBER	**MID TERM EXAM**		
		Unit III: Database Management System **aggregate functions** (max, min, avg, sum, count), group by, having clause, **joins:** cartesian product on two tables, equi-join and natural join **Interface of python** with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications	MySQL DDL commands MySQL DML Commands Project work documentation	**8**
PT	**DURATION**	**UNIT/CHAPTERS**	**PRACTICALS/PROJECTS**	**Working Days**
PT-3 /(PRE-BOARD)	**NOVEMBER**	**Unit II: Computer Networks** **Evolution of networking**: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET) **Data communication terminologies:** concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching) **Unit II: Computer Networks** **Transmission media:** Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves) **Network devices** (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card) **Network topologies and Network types:** types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)	Networking Practical	**20**

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	DECEMBER	**Unit II: Computer Networks** **Network protocol:** HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP **Introduction to web services:** WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting	Networking Project Work	**20**
PT	**DURATION**	**UNIT/CHAPTERS**	**PRACTICALS/PROJECTS**	**Working Days**
PRE-BOARDS	**DECEMBER**	**Pre-Board /Post Mid Term Examination**		
	JANUARY 2025	Thorough Revision for the Final Examinations		**24-8=16**
	February 2025	**Final Practical Examination**		

1. The manner of taking the above mentioned practical and project work may differ as per the subject teacher.
2. The syllabus for the Periodic Test will be discussed prior to all the respective examinations as usual.

HEAD OF DEPARTMENT: _____ **School Principal: _____**

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