



MAHARISHI VIDYA MANDIR



SITAPUR ROAD LUCKNOW

Session – 2019-20

Subject – Computer Science

Syllabus : Class – XIth

| S NO. | MONTH | TOPIC /CONTENT |
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| 1 | APRIL-19 | Unit 1: Computer Systems and Organization <ul style="list-style-type: none">• Basic computer organization: description of a computer system and mobile system, CPU, memory, hard disk, I/O, battery.• Types of software: application, System, utility.• Memory Units: bit, byte, MB, GB, TB, and PB.• Boolean logic: OR, AND, NAND, NOR, XOR, NOT, truth tables, De Morgan's laws• Information representation: numbers in base 2, 8, 16, binary addition |
| 2 | MAY-19 | Unit 1: Computer Systems and Organization Continued..... <ul style="list-style-type: none">• Strings: ASCII, UTF8, UTF32, ISCII (Indian script code), Unicode• Basic concepts of Flowchart• Concept of Compiler & Interpreter• Running a program: Notion of an operating system, how an operating system runs a program, idea of loading, operating system as a resource manager.• Concept of cloud computing, cloud (public/private), introduction to parallel computing. |
| 3 | JULY -19 | Unit 2: Computational Thinking and Programming <p>Basics of Computational Thinking: Decomposition, Pattern Recognition/ Data representation, Generalization/ Data Abstraction and algorithm.</p> <p>Familiarization with the basics of Python programming: a simple "hello world" program, process of writing a program (Interactive & Script mode), running it, and print statements; simple data-types: integer, float, string</p> <ul style="list-style-type: none">• Features of Python, Python Character Set, Token & Identifiers, Keywords, Literals, Delimiters, operators.• Comments: (Single line & Multiline/ Continuation statements), Clarity & Simplification of expression.• Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly).• Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.• Operators & types: Binary operators-Arithmetic, Relational operators, Logical Operators, Augmented Assignment operators. |

| PERIODIC TEST-I | | |
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| 4 | AUG-19 | <p>Unit 2: Computational Thinking and Programming continued.....</p> <ul style="list-style-type: none"> • Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3 numbers, and divisibility. • Notion of iterative computation and control flow: for(range(),len()), while,flowcharts, suggested programs: interest calculation and factorials, etc. • Idea of debugging: errors and exceptions; debugging: pdb, break points. • Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names. • Sorting algorithm: bubble and insertion sort;count the number of operations while sorting. • Strings: Traversing, compare, concat, substrng. • Introduction to Python modules: Importing math (sqrt, cell, floor, pow, fabs, sin, cos, tan, random (random, randint, randrange), statistics (mean, median, mode) modules. <p style="text-align: center;">PRACTICAL</p> <ul style="list-style-type: none"> • Find the largest and smallest numbers in a list. • Find the third largest number in a list. • Test for primarily. • Find whether a string is a palindrome or not. • Given two integers x and n, compute xn. • Compute the greatest common divisor and the least common multiple of two integers. • Test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such numbers. |
| 5 | SEP-19 | <p>Unit 3: Data Management</p> <ul style="list-style-type: none"> • Relational databases: Concept of a database, relations, attributes and tuples, keys- candidate key, primary key, alternate key, foreign key; Degree and cardinality of a table. • Use SQL – DDL/ DML commands to CREATE TABLE, INSERT INTO,UPDATE TABLE , DELETE FROM, ALTER TABLE,MODIFY TABLE, DROP TABLE, keys, and foreign keys; to view content of a table: SELECT-FROMWHERE-ORDER BY along with BETWEEN, IN, LIKE, (Queries only on single table) • Aggregate functions – MIN,MAX,AVG,COUNT,SUM • Basics of NoSQL databases. <p style="text-align: center;">PRACTICAL</p> <ul style="list-style-type: none"> • Create a student table with the student id, name, and marks as attributes where the student idis the primary key. • Insert the details of a new student in the above table. • Delete the details of a particular student in the above table. • Use the select command to get the details of the students with marks more than 80. • Create a new table (name, date of birth) by joining two tables (student id,name) and (studentid, date of birth). • Create a new table (order ID, customer Name, and order Date) by joining two tables (order ID, customer ID,and order Date) and (customer ID, customer Name, contact Name, country). |

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| 6 | OCT-19 | REVISION FOR HALF YEARLY EXAM |
| | NOV-19 | Unit 4: Society, Law and Ethics - Cyber safety <ul style="list-style-type: none"> • Cyber safety: safely browsing the web, identity protection, confidentiality, social networks, cyber trolls and bullying • Appropriate usage of social networks: spread of rumours, and common social networking sites (Twitter, LinkedIn, and Facebook) and specific usage rules. |
| 7 | DEC-19 | Unit 4: Society, Law and Ethics - Cyber safety continued..... <ul style="list-style-type: none"> • Safely accessing web sites: adware, malware, viruses, Trojans • Safely communicating data: secure connections, eavesdropping, phishing and identity verification. |
| 8 | JAN-20 | Revision for Annual examination |

PRACTICAL

| S No. | Unit Name | Marks (Total=30) |
|-------|---|---------------------|
| 1. | Lab Test (12 marks) | |
| | Python program (60% logic + 20% documentation + 20% code quality) | 8 |
| | SQL program (at least 4 queries) | 4 |
| 2. | Report File + viva (10 marks) | |
| | Report file: Minimum 20 Python programs and 8 SQL commands | 7 |
| | Viva voce (based on the report file) | 3 |
| 3. | Project (that uses most of the concepts that have been learnt) (See CS-XII for the rules regarding the projects) | 8 |