SPLIT-UP SYLLABUS

SUB: COMPUTER SCIENCE (083)

CLASS - XI (NEW SYLLABUS)

Session 2021-22

# DISTRIBUTION OF MARKS

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| **Unit No.** | **Unit Name** | **Theory Marks** |
| **I** | **Computer Systems and Organisation** | **10** |
| **II** | **Computational Thinking and Programming - 1** | **45** |
| **III** | **Society, Law and Ethics** | **15** |
|  | **Total** | **70** |

**MONTH- WISE DISTRIBUTION**

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| **Month** | **Topics to be covered** | **Th.** | **Pr.** |
| **September** | **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
* 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)
* Emerging trends: Cloud computing, cloud services (SaaS, IaaS, PaaS), blockchains, Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT)
 | 30 | 25 |
| **September** | **Unit 2: Computational Thinking and Programming*** 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 | 25 | 25 |

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|  | * Errors: syntax errors, logical errors, runtime errors
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| **October** | * 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, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
* 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()
 | 25 | 20 |
| **October** |  |
| * 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, suggested 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 list | 10 | 06 |
|  | Term 2 |  |  |
| **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, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple
* 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(), copy(); suggested 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 | 20 | 10 |
| **December** | * Sorting techniques: Bubble and Insertion sort
* 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, median,mode) | 30 | 24 |
| **January** | 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 softwares 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)
 | 10 |  |

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|  | * Technology & Society: Gender and disability issues while teaching and using

computers |  |  |
| **Feb** | Revision, Project Work , Session Ending Practical Examination |  |  |

PRACTICAL WORK

CLASS – XI : COMPUTER SCIENCE (083)

# DISTRIBUTION OF MARKS

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| **S.No.** | **Area** | **Marks** |
| **(Total=30)** |
| **1.** | **Lab Test (12 marks)****Python program (60% logic + 20% documentation + 20% code quality)** | **12** |
| **2.** | **Report File + Viva (10 marks)****Report file: Minimum 20 Python programs** | **7** |
| **Viva voce** | **3** |
| **3.** | **Project (8 marks)****(that uses most of the concepts that have been learnt See CS- XII for the rules regarding the projects)** | **8** |