**NAVY CHILDREN SCHOOLS**

**SPLIT UP SYLLABUS**

**COMPUTER SCIENCE – CLASS XI**

**YEAR -2024-25**

1. Distribution of Marks:
2. Monthly Split up syllabus:

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| **Month** | **Chapter** | **Content/Practical/Assignment** | **Practical / Projects** |
| June/ July | 1. Computer Systems and Organisation
2. Boolean Logic
 | * 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 | Identifying various components of ComputerMaking logical gates and proving theorems |

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|  | 1. Number System
2. Encoding Schemes
 | * Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
* Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)
 | Number System Conversion |
| August | 1. Introduction to problem solving
2. Getting

Started with Python1. Python

Fundamentals & Data Handling1. Python

Expressions & Statements1. Errors & Debugging
2. Flow of

control: sequential & conditional flow, Loops | * Steps for problem solving (analysing the problem, developing an algorithm, coding,
 | Writing Algorithms and preparing flowcharts for simple problemsLaunching and working with python IDLE.Working in Interactive and script modesUse of operators, framing &evaluating expressions, type conversions, etc in Interactive modeBasic Programs, Programs that require decision making.Programs based on loops |
|  | testing and debugging). Representation ofalgorithms 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, Pythoncharacter 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 asinput from the console and displaying |
|  | Output* Errors: syntax errors, logical errors, runtime errors
 |
|  | * 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 |

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| Sept | 11. Strings in Python | * 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() | Programs based on string manipulations |
| Oct/Nov | 12.Lists | * 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.* 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 accessthem | Programs based on list operations |
|  | 13.Tuples | Programs based on tuples |
|  | 14. Dictionary |  |
|  |  | Programs based on dictionari es |

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| Dec/JanJan/Feb | 1. Introduction to Python Modules
2. Society, Laws and Ethics
 | * 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()).
* 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)
* Technology & Society: Gender and disability issues while teaching and using computers.
 | Programs importing and using modules.Understan di ng of Cyber laws and online ethics including safety measures to protect data and information available online |
| Revision for NES Common Final Exam |