**Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj**
**Master of Science (Computer Applications & Information Technology)**
**Semester: I**

| Paper Code: CCCS101 | | Total Credit : 4 |
|---|---|---|
| **Title of Paper:** Introduction to Computer Science and Programming | | **Total Marks :** 70 **Time :** 3 Hrs |
| | | |

| Unit | Description | Weighting |
|---|---|---|
| I | **Introduction:** **Core Elements of a** IDLE, types of objects, operators, overloading, commands, variable, assignment, input, straight line and branching programs, looping constructs, Turing completeness, conditionals, nesting. | 20% |
| II | **Problem Solving:** Termination, decrementing functions, exhaustive enumeration, brute force, while loop, for loop, approximation, specifications, bisection search. | 20% |
| III | **Machine Interpretation of a** Decomposition, module, function, abstraction, formal parameter, actual parameter, argument, assert, scope, mapping, stack, last in first out, string, slicing**.** | 20% |
| IV | **Object in Python:** Tuples, lists, dictionaries, methods, identifiers, modifying objects, aliasing, mutability **Recursion:** Dictionaries, modular abstraction, divide and conquer, recursion, tower of Hanoi, base case, Fibonacci Sequence. | 20% |
| V | **Efficiency and Order of Growth:** Efficiency, problem reduction, RAM, best case, worst case, expected case, growth, exponential growth, polynomial growth, logarithmic growth, global variable. **Memory and Search Methods:** Memory, storage, indirection, sorting | 20% |
| **Basic Text & Reference Books :-** | | |
| 1. | Guttag, John. Introduction to Computation and Programming Using Python, MIT Press, 2013. ISBN: 9780262519632 | |
| 2. | Downey, Allen B. Think Python, Shroff, ISBN:9350238632 | |

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| Unit | Description | | Total Marks |
|---|---|---|---|
| I | Q.1 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 04 | 14 |
| | Q.1 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.1 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| II | Q.2 (A) Answer the Following. (Definitions, Blanks, Full Forms, True/False, Match the Following) | 04 | 14 |
| | Q.2 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.2 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| III | Q.3 (A) Short / Medium Questions (With Internal Option) | 04 | 14 |
| | Q.3 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.3 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| IV | Q.4 (A) Short / Medium Questions (With Internal Option) | 04 | 14 |
| | Q.4 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.4 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |
| V | Q.5 (A) Short / Medium Questions (With Internal Option) | 04 | 14 |
| | Q.5 (B) Medium / Long Questions. (With Internal Option) | 06 | |
| | Q.5 (C) Algorithm/ Pseudo Code/Program in Python. (With Internal Option) | 04 | |