Paper I - Computer Science Theory Paper I

Title : Problem Solving Using Computers and 'C' Programming

Objective :- To develop Problem Solving abilities using computers

i) To teach basic principles of programming
ii) To develop skills for writing programs using 'C'

Syllabus

Computer Science: Paper – I :Problem Solving Using Computers and 'C' Programming		
No	Topic	Lectures
1	Problem Solving using Computers Problem-Solving Fundamental Algorithms Algorithms 1.2 Flowcharts	8
2	Programming Languages as Tools Machine language Assembly language High level languages Compilers and Interpreters	3
3	Introduction to C History Structure of a C program Functions as building blocks Application Areas C Program development life cycle	2
4	C Tokens Keywords Identifiers Variables Constants – character, integer, float, string, escape sequences Data types – built-in and user defined Operators and Expressions Operator types (arithmetic, relational, logical, assignment, bitwise, conditional , other operators) , precedence and associativity rules.	12
5	Input and Output Character input and output String input and output Formatted input and output	3
6	Control Structures Decision making structures If, if-else, switch Loop Control structures While, do-while, for Nested structures break and continue	10

7	Functions in C What is a function Advantages of Functions Standard library functions User defined functions :Declaration, definition, function call, parameter passing (by value), return keyword, Scope of variables, storage classes Recursion	8
8	Arrays Array declaration, initialization Types – one, two and multidimensional Passing arrays to functions	8
9	Pointers Pointer declaration, initialization Dereferencing pointers Pointer arithmetic Pointer to pointer Arrays and pointers Functions and pointers – passing pointers to functions, function returning pointers Dynamic memory allocation	6
10	Strings Declaration and initialization Standard library functions Strings and pointers Array of strings.	4
11	Structures and Unions Creating structures Accessing structure members (dot Operator) Structure initialization Array of structures Passing structures to functions Nested structures Pointers and structures Unions Difference between structures and unions	6
12	C Preprocessor Format of Preprocessor directive File Inclusion directive Macro substitution, nested macro, argumented macro	2
13	Command Line Arguments 13.1. Accessing command line arguments	2
14	File Handling	6

	Streams Types of Files Operations on files Random access to files	

References

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3. A Structured Programming Approach Using C, Behrouz A. Forouzan, Richard F. Gilberg ISBN:9788131500941, Cengage Learning India
4. Using The GNU Compiler Collection, Richard M. Stallman;The GCC Developer Community Pothi.com
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