Paper Code: HCSGE1012T	Paper Name: Computer Fundamentals and Programming in C (THEORY)	Marks: 60
Sl. No.	Торіс	No. of Periods
GROUP-A		26
1	<b>Introduction to Computer:</b> Different Generations, Functional Units, Basic I/O devices, Storage devices, Bus Structure	2
2	<b>Number Systems and Codes:</b> Weighted and Non-Weighted Codes, Positional Number Systems like Binary, Octal, Decimal and Hexadecimal, Conversion of one number system to another, BCD, Concept of r's and (r-1)'s Complement.	5
3	<b>Binary Arithmetic:</b> Addition and Subtraction using Complement Operation. <b>Representation of Characters:</b> ASCII and Unicode	2
4	Introduction to Problem Solving: Concept of Data and Information, Basic problem solving using Flow Chart and Algorithm	3
5	Software: Types and Brief Ideas about Each of the Types	4
6	IntroductiontoC - HistoryofC, Overview ofProceduralProgramming, Usingmain() function, Compilingand Executing SimplePrograms in C.	2
7	<b>Types,Variables,Constants,OperatorsandBasicI/O</b> - Declaring, Defining andInitializing Variables, Scope ofVariables, Keywords, Data Types,CastingofDataTypes, Operators (Arithmetic,Logical andBitwise), UsingComments in programs, CharacterI/O(getc,getchar, putc,putchar, etc), Formatted and ConsoleI/O (printf(), scanf()), Using Basic HeaderFiles (stdio.h, conio.h, etc.).	4
8	<b>Expressions, Conditional Statements and Iterative Statements</b> - Simple Expressions in C (including UnaryOperator Expressions, BinaryOperator Expressions), Understanding Operators Precedencein Expressions, Conditional Statements (if construct, switch-case construct), Understandingsyntaxand utilityof Iterative Statements (while, do-while, and for loops), Useof break and continue in Loops, Using Nested Statements (Conditional as well as Iterative).	4

	GROUP-B	26
9	<ul> <li>FunctionsandArrays - Utility of functions, Call by Value, Call by Address, Functions returning value, Void functions, Inline Functions, Return data type of functions, Functions parameters, Differentiating between Declaration and Definition of Functions, Command Line Arguments/Parameters in Functions, Functions with variable number of Arguments.</li> <li>Creating and Using OneDimensional Arrays( Declaring and Defining anArray,Initializing an Array, Accessingindividual elements in an Array, Manipulating arrayelements using loops), UseVarious types of arrays (integer, floatand character arrays / Strings) Two-dimensional Arrays (Declaring, Defining andInitializing Two DimensionalArray, Working with Rows and Columns),Introduction to Multi-</li> </ul>	10
10	dimensional arrays <b>DerivedDataTypes(StructuresandUnions)</b> - Understandingutilityof structures and unions, Declaring, initializingand usingsimple structures and unions, Manipulatingindividual members ofstructures andunions, Arrayof Structures,Individual data members as structures,Passingand returningstructures from functions, Structure withunion as members, Union with structures as members.	4
11	<b>PointersinC</b> - UnderstandingaPointer Variable, Simple useofPointers (Declaring andDereferencing Pointers to simple variables), Pointers to Pointers, Pointers to structures, Problems with Pointers, Passingpointers as function arguments,Returningapointer from function, using arraysas pointers, Passingarrays to functions.	4
12	<b>MemoryAllocationinC</b> - Differentiatingbetweenstaticanddynamicmemoryallocation,useofmalloc,callocandfree functions in C, storage class specifiers in C and storageofvariablesinstaticand dynamicmemory allocation.	4
13	<b>FileI/O,PreprocessorDirectives</b> - Opening and closinga file (useoffstreamheader file, ifstream, ofstreamand fstreamclasses), Reading and writingTextFiles, Usingput(),get(),read() and write()functions, Randomaccess in files, UnderstandingthePreprocessor Directives (#include, #define, #error, #if, #else, #elif, #endif, #ifdef, #ifndefand #undef), Macros.	4
Total		
<ol> <li>Books and References:</li> <li>"Let Us C" by YashavantKanetkar</li> <li>"Programmingin Ansi C" by E.Balagurusamy.</li> <li>"Programming in C" by ReemaThareja.</li> </ol>		

Paper Code: HCSGE1012P	Problem solving using C (PRACTICAL)	Marks: 40
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