GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR*Department of Computer Sc(2026-27)*

*Lesson Plan*2026-2027(ODD SEM)

*Class **MSc. Computer Semester -I***

Name of Teacher…**Rajesh Kumar**

Subject/Paper-dm

Sr. No.	Week Days	Subject Matter/ Syllabus
Unit-1	Aug	Sets: Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection and Complements of Sets, Cartesian Product, Cardinality of Set, Simple Applications. Relations and functions: Properties of Relations, Equivalence Relation, Partial Order Relation, Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions.
Unit-2	sept	UNIT – II Propositional Logic: Proposition logic, basic logic, Logical Connectives, truth tables, tautologies, contradiction, Logical implication, Logical equivalence, Normal forms, Theory of Inference and deduction. Predicate Calculus: Predicates and quantifiers. Mathematical Induction.
Unit-3	oct	UNIT – III Matrices: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint and Inverse of a matrix. Determinants: Definition, Minors, Cofactors, Properties of Determinants, Applications of determinants in finding area of triangle, Solving a system of linear equations..
Unit-4	Nov	Introduction to defining language, Kleene Closure, Arithmetic expressions, Chomsky Hierarchy, Regular expressions. 4 | P a g e Conversion of regular expression to Finite Automata, NFA, DFA, Conversion of NFA to DFA, FA with output: Moore machine, Mealy machine.

Signature

HOD

GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR*Department of Computer Sc (2026-27)*

Lesson Plan(ODD SEM)

Class MSC ***Semester 3***

Name of Teacher... **Rajesh Kumar**

Subject/Paper-Java

Sr. No.	Week Days	Subject Matter/ Syllabus
Unit-1	Aug	Java History, Java features Java and Internet, Java and World Wide Web, Java Program Structure, Java Tokens, Java Virtual Machine, Data Types, Operators and Expressions, Decision Making and Branching, looping Classes and Methods. Inheritance: Using Existing Classes, Class Inheritance, Choosing Base Class, Access Attributes, types of Inheritance, Abstract Classes, Using Final Modifier.
Unit-2	Sept	Polymorphism: Types of polymorphism. Packages & Interfaces: Understanding Packages, Defining a Package, Packaging up Your Classes, Adding Classes from a Package to Your Program, Understanding CLASSPATH, Access Protection in Packages, Concept of Interface. Exception Handling: Types of Exceptions, Dealing with Exceptions, Exception Objects.
Unit-3	oct	Multithreading Programming: Understanding Threads, The Main Thread, Creating a Thread, Creating Multiple Threads, Thread Priorities, Synchronization, Deadlocks Inter-thread communication Input/Output in Java: I/O Basic, Byte and Character Structures, I/O Classes, Reading Console. Creating Applets in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Simple Applet Display Methods, Requesting Repainting, Using The Status Window, The HTML APPLET Tag Passing Parameters to Applets.
Unit-4	Nov	AWT: Working with AWT Controls, AWT Classes, Window Fundamentals, Working with Frame, Creating a Frame Window in an Applet, Displaying Information Within a Window. Working with Graph: Working with Graphics, Working with Color, Setting the Paint Mode, Working with Fonts, Exploring Text and Graphics, Layout Managers and Menus.

Signature

HOD

GOVT. POST GRADUATE NEHRU COLLEGE,

*Department of Computer ScLesson Plan*2026-2027(ODD SEM)

Class ***BCA Computer Semester –I***

Subject/Paper- Problem Solving Techniques

Name of Teacher…**Rajesh Kumar**

Sr. No.	Week Days	Subject Matter/ Syllabus
Unit-1	Aug	UNIT I: (CO-1, CO-2) Problems And Problem Instances, Generalization and Special Cases. Types of Computational Problems. Classification of Problems. Analysis of Problems. Solution Approaches. Algorithm Development. Analysis of Algorithm. Efficiency. Correctness. Role of Data Structures in Problem Solving. Problem-Solving Steps (Understand the Problem. Plan. Execute. And Review). Breaking the Problem into Subproblems. Input/Output Specification. Input Validation. Pre and Post Conditions.
Unit-2	sept	Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If. If-Else) And Repetition (For. While. Do-While) Statements. Control Structure Stacking and Nesting. Different Kinds of Repetitions: Entry Controlled. Exit Controlled. Counter Controlled. Definite. Indefinite and Sentinel-Controlled Repetitions. Pseudocode and Flowcharts. Definition And Characteristics of Algorithms. Standard Algorithm Format. Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and Numbers. Generating Arithmetic and Geometric Progression. Fibonacci and Other Sequences. Approximate Values For π. Sin(x). Cos(x). Etc. Using Taylor Series. Different Kinds of Data in The Real World and How They are Represented in The Computer Memory. Representation of Integers: Signed Magnitude Form. 1's Complement And 2's Complement. Representation of Real Numbers: IEEE 754 Floating Point Representation. Representation of Characters: ASCII. UNICODE. C Language: Introduction To Programming Languages. Different Generations of Programming Languages. Typed Vs Typeless Programming Languages. History of C Language. An Empty C Program. C Language Counterparts For Input (scanf()). Output (printf()) Statements. Assignment. Arithmetic. Relational and Logical Operators. If. If-Else Statements. For. While. Do-While Statements. Data Types. Translating Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The C Program. Simple Problems Involving Input. Output. Assignment Statement. Selection and Repetition. Good Coding Practices.
Unit-3	oct	Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left). Palindrome. Prime Number. Prime Factors. Amicable Number. Perfect Number. Armstrong Number. Factorial. Converting Number from One Base to Another. Statistics (Maximum. Minimum. Sum and Average) on a Sequence of Numbers which are Read using Sentinel Controlled Repetition using only a few Variables. C Language: else-if Ladder. switch Case. Increment/Decrement Operators. break and continue Statements.
Unit-4	Nov	Modular Programming. Top-Down and Bottom-Up Approaches to Problem Solving. Recursion. Problems on Arrays: Reading and Writing of Array Elements. Maximum. Minimum. Sum. Average. Median and Mode. Sequential And Binary Search. Any one Sorting Algorithm. Matrix Operations. C Language: Function Definition and Declaration (Prototype). Role of Return Statement. One Dimensional and Two-Dimensional Arrays. String Functions. Other Operators. Operator Precedence and Associativity. Debugging.

Signature

HOD

GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR*Department of Computer Sc(2026-27)*

*Lesson Plan*2026-2027(ODD SEM)

*Class **MSc. Computer Semester -3***

Name of Teacher…**Rajesh Kumar**

Subject/Paper-Design and Analysis of Algorithm

Sr. No.	Week Days	Subject Matter/ Syllabus
Unit-1	Aug	Introduction of Algorithms, Analysis of algorithms: Space Complexity, Time Complexity, recurrence relation and Asymptotic Notation Divide and Conquer: General Methods, Binary Search, Quick sort, Merge sort, Strassen's matrix multiplication
Unit-2	sept	Unit – II Greedy Strategy: Introduction, examples of greedy method like Huffman coding, Minimum spanning trees, knapsack problem, job sequencing with deadlines, single source shortest path algorithms. Graphs, its basic terminologies, representation, traversal algorithms.
Unit-3	oct	. Unit – III Dynamic Programming: Introduction, Longest common subsequence, Matrix chain multiplication, Floyd Warshall algorithms. Backtracking Concept and its example like 8 Queen's problem, Hamiltonian cycle, Graph Colouring problem, Least Cost Search
Unit-4	Nov	Unit – IV Branch and Bound: General method, applications - travelling sales person problem, 0/1 knapsack problem- LC branch and bound solution, FIFO branch and bound solution. NP-Hard and NP-Complete Problems: Basic concepts, Non-Deterministic Algorithms, NP-hard and NP complete classes

Signature

HOD