**Lesson Plan**

Name of the Faculty : Ms. Ritu Khurana

Discipline : CSE/IT

Semester : 4th

Subject : Discrete Mathematics

Lesson Plan Duration : 15 weeks (From January, 2019 to April 2019)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory** | |
| **Lecture Day** | **Topic** |
| **1st** | **1st** | * Operations and Laws of Sets * Cartesian Products |
| **2nd** | * Binary Relations * Partial Ordering Relation |
| **3rd** | * Equivalence Relation * Image of a set * Types of Functions * Inverse and Composite Function |
| **2nd** | **4th** | * Size of a set * Cantor’s Diagonal Argument and Power Set Theorem |
| **5th** | * Schroeder-Bernstein Theorem |
| **6th** | * Well Ordering Principle * Recursive Definition |
| **3rd** | **7th** | * Division Algorithm: Prime Numbers * Greatest Common Divisor: Euclidean Algorithm |
| **8th** | * Fundamental Theorem of Arithmetic |
| **9th** | * Inclusion and Exclusion * Pigeon-hole Principle |
| **4th** | **10th** | * Permutation |
| **11th** | * Combination |
| **12th** | * Syntax and Semantics of Propositional Logic |
| **5th** | **13th** | * Validity and Satisfiability |
| **14th** | * Basic Connectives and Truth Tables |
| **15th** | * Laws of Logic * Logic Implication |
| **6th** | **16th** | * Rules of Inference |
| **17th** | * Use of Quantifiers |
| **18th** | * Proof Techniques: Terminology, Proof Methods and Strategies |
| **7th** | **19th** | * Forward Proof * Proof by Contradiction |
| **20th** | * Proof by Contraposition * Proof of Necessity and Sufficiency. |
| **21st** | * Algebric Sturctures with one Binary Operation |
| **8th** | **22nd** | * Semigroups, Monoids,Groups |
| **23rd** | * Congruence Relation and Quotient Structures |
| **24th** | * Free and Cyclic Groups |
| **9th** | **25th** | * Permutation Groups |
| **26th** | * Substructures, Normal Subgroups |
| **27th** | * Rings |
| **10th** | **28th** | * Integral Domain and Fields |
| **29th** | * Boolean Algebra and Ring |
| **30th** | * Identities of Boolean Algebra |
| **11th** | **31st** | * Duality, Representation of Boolean Function |
| **32nd** | * Disjunctive and Conjunctive Normal form. |
| **33rd** | * Graphs and their Properties |
| **12th** | **34th** | * Degree, Connectivity, Path, Cycle, Sub Graph |
| **35th** | * Isomorphism, Eulerian and Hamiltonian Walks |
| **36th** | * Graph Colouring * Colouring Maps |
| **13th** | **37th** | * Planer Graphs * Colouring Vertices and edges |
| **38th** | * List Colouring |
| **39th** | * Perfect Graph and its Properties |
| **14th** | **40th** | * Rooted Trees, weighted trees |
| **41st** | * Prefix codes |
| **42nd** | * Biconnected Component |
| **15th** | **43rd** | * Articulation Points |
| **44th** | * Shortest Distances |
| **45th** | * Revision |