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| Discrete Mathematics and Number System | |
| **SOURCE: 01** | **Discrete Mathematics (GATE EXAM)** | |
| 01 | [Discrete Mathematics Syllabus](https://www.youtube.com/watch?v=YBb2oYIzXK0&list=PLxCzCOWd7aiH2wwES9vPWsEL6ipTaUSl3&index=1&pp=iAQB) | |
| 02 | Introduction to Set Theory | Set, Subset, Proper Subset | |
| 03 | Power Set | Set Theory and Algebra | |
| 04 | Relation in Set Theory with Example | |
| 05 | Reflexive Relation with Example | |
| 06 | How Man Reflexive Relations Possible | |
| 07 | Irreflexive Relation with Example | |
| 08 | Symmetric Relation with Example | |
| 09 | Antisymmetric Relation with Example | |
| 10 | Asymmetric vs Antisymmetric Relation with Example | |
| 11 | Transitive Relation with Examples | |
| 12 | Equivalence Relation in Discrete Mathematics with Examples | |
| 13 | Partial Order Relation | POSET in Discrete Mathematics | |
| 14 | Totally Ordered Set in Discrete Mathematics | |
| 15 | Comparison of All Relations | Reflexive, Irreflexive, Transitive, Symmetric, Antisymmetric | |
| 16 | Introduction to Group Theory | |
| 17 | Algebraic Structure in Discrete Mathematics | |
| 18 | Semigroup in Group Theory | |
| 19 | Monoid in Discrete Mathematics | Group Theory | |
| 20 | Group in Discrete Mathematics with Example | |
| 21 | Abelian Group in Discrete Mathematics with Example | |
| 22 | Function in Discrete Mathematics | |
| 23 | How Many Functions Possible | Counting Functions | |
| 24 | One to One Function (Injection) | Injective Function | |
| 25 | ONTO Function (Surjection) | Surjective Function | |
| 26 | Bijective Function (Bijection) | |
| **SOURCE: 01** | **Number System (GATE EXAM)** | |
| 01 | [Number System in Digital Electronics](https://www.youtube.com/watch?v=2joeDD5-v3s&list=PLxCzCOWd7aiFOet6KEEqDff1aXEGLdUzn&index=1&pp=iAQB) | |
| 02 | Convert Decimal to Any Other Base (Binary | Octal | Hex) | |
| 03 | Convert Any Base to Decimal (Binary | Octal | Hex) | |
| 04 | Conversion Between (Binary, Octal, Hexadecimal) | Conversion Between Any Base with Power of 2 | |
| 05 | Question of Number System | |
| 06 | What are Signed and Unsigned Number | Arithmetic Operation | |
| 07 | Addition in Binary, Octal, and Hexadecimal Number System | |
| 08 | BCD, Excess-3 Code and conversion with Example | |
| 09 | Binary to Gray Code conversion and Vice-versa | |
| 10 | Floating Point Representation with Example | |
| 11 | Find 1’s Complement and 2’s Complement | |
| 12 | Complements (1’s, 2’s, 7’s, 8’s, 9’s, 10’s, 15’s, 16’s) | r’s Complements | (r-1)’s | |
| 13 | BCD Addition with Examples | |
| 14 | Binary Multiplication with Example | |
| 15 | Ranges of Sign Magnitude, 1’s and 2’s Complement | |
| 16 | Introduction to Binary Code (ASCII, UNICODE, EBCDIC, BCD) | |
| 17 | Self-Complementary Codes | |
| 18 | Short Trick for 2’s Complement | |
| 19 | Short Trick for 9’s and 10’sComplement | |
| 20 | Short Trick for 7’s and 8’s Complement Short Trick | |
| 21 | Binary Addition and Subtraction | |