**Rules**

|  |  |
| --- | --- |
| **Name of laws** | **Equivalence** |
| Identity laws |  |
| Domination laws |  |
| Idempotent laws |  |
| Commutative laws |  |
| Associative laws |  |
| Distributive laws |  |
| De Morgan’s laws |  |
| Absorption laws |  |
| Negation laws |  |
| **Bi-conditional:** | ***p***↔***q*** ≡¬**(*p***⊕***q*)** |
| **Exclusive OR** | ***p***⊕***q*** ≡ **(*p***∨***q*)**∧¬**(*p***∧***q*)** |

**Rules of Inference**

|  |  |  |  |
| --- | --- | --- | --- |
| **Rule of Inference** | **Names** | **Rule of Inference** | **Names** |
|  | Modus ponens | ∀xP(x)  ∴ P(c) | Universal instantiation |
|  | Modus tollens | P (c) for an arbitrary c  ∴ ∀xP(x) | Universal generalization |
|  | Hypothetical syllogism | ∃xP(x)  ∴P (c) for some element c | Existential instantiation |
|  | Disjunctive syllogism | P (c) for some element c  ∴ ∃xP(x) | Existential generalization |
|  | Addition |  |  |
|  | Simplification |  |  |
|  | Conjunction |  |  |
|  | Resolution |  |  |