DMS RELATIONS FOR PROBLEM SOLVING

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BASIC LAWS:

1. IDENTITY LAW: REMEMBERING TRICK: GIVES THE SAME IDENTITY
   - P AND TRUE==P
   - P OR FALSE==P
2. DOMINATION LAW: REMEMBERING TRICK:TRUE AND FALSE ARE ALWAYS DOMINANT IN BOTH AND/OR OPERATION.
   - P AND T == T
   - P OR F==F
3. NEGATION LAW: REMEMBERING TRICK:
   OR->T AND->F
   - P OR ~P==T (~ REPRESENTS NEGATION)
   - P AND ~P==F
4. DOUBLE-NEGATION LAW:
   REMEMBERING TRICK:
   NEGATION OF NEGATION IS ITSELF.
   - ~ ~P==P
5. IDEMPOTENT LAW: REMEMBERING TRICK:
   AND/OR OPERATION AMONG SAME OPERAND GIVE THE SAME OUTPUT
   - P OR P==P
   - P AND P==P

NOTE::::****P,Q,R ARE ALL CALLED OPERANDS.

6. COMMUTATIVE LAW: REMEMBERING TRICK:
JUST LIKE A+B==B+A

- P AND Q==Q AND P
- P OR Q==Q OR P

7. DE-MORGAN'S LAW: (IMP)

- ~ (P OR Q)==~P AND ~Q
- ~ (P AND Q)==~P OR ~Q

8. ASSOSIATIVE LAW: REMEMBERING TRICK:
THREE OPERANDS WITH SAME OPERATION (EITHER AND / OR) WE USE ASSOSIATIVE LAW.

- P AND (Q AND R)==(P AND Q)AND R
- P OR (Q OR R)==(P OR Q) OR R

9. DISTRIBUTIVE LAW: REMEMBERING TRICK:
THREE OPERANDS WITH DIFFERENT OPERATIONS (EITHER AND / OR) WE USE DISTRIBUTIVE LAW.

- P AND (Q OR R)==(P AND Q) OR (P AND R)
- P OR (Q AND R)==(P OR Q) AND R

10. ABSORPTION LAW:

- P OR (P AND Q)==P
- P AND (P OR Q)==P

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LOGICAL EQUIVALENCE

1. P→Q== ~P OR Q
2. P→Q== ~Q→~P
3. ~P→Q==P OR Q
4. ~(Q→~P)==P AND Q
5. P→(Q AND R)==(P→Q) AND (P→R)
6. (P OR Q)→R==(P→R) AND (Q→R)
7. P→(Q OR R)==(P→Q) OR (P→R)
8. (P AND Q)→R==(P→R) OR(Q→R)
9. P←→Q==(P→Q) AND (Q→P)
10. P←→Q== ~P←→~Q
11. P←→Q==(P AND Q) OR (~P AND ~Q)
12. ~(P←→Q)==P←→~Q

ORDER OF PRECEDENCE OF OPEARTIONS

1. NEGATION (~)
2. AND
3. OR
4. IMPLIES (→)
5. DOUBLE IMPLIES (←→)

HERE: 5>4>3>2>1 i;e top to bottom precedence increases.