Lecture - 3 (Extra)

Satisfiability

A compound proposition is satisfiable if there is at least one TRUE result in its truth table.

p	q	r	(p ∨ ¬q)	(q ∨ ¬r)	(r ∨ ¬p)	(p ∨ ¬q) ∧ (q ∨ ¬r) ∧ (r ∨ ¬p)
T	T	T	T	T	T	T
T	T	F	T	T	F	F
T	F	T	T	F	T	F
T	F	F	T	T	F	F
F	T	T	F	T	T	F
F	T	F	F	T	T	F
F	F	T	T	F	T	F
F	F	F	T	T	T	T

Unsatisfiability

A compound proposition is unsatisfiable if not even a single TRUE result in its truth table.

Valid

A compound proposition is valid when it is a tautology.

Invalid

A compound proposition is invalid when it is either a contradiction or contingency.

Important Notes

- Tautology is always satisfiable but satisfiable is not always tautology.

- Invalid not only means a compound proposition is always FALSE . If a compound proposition is sometimes TRUE and sometimes FALSE, then also it is said to be invalid.

Summery

Tautology	Contradiction	Contingency
Always TRUE	Always FALSE	Sometimes TRUE or FALSE
Satisfiable	Unsatisfiable	Satisfiable
Valid	Invalid	Invalid