COMP 681 Formal Methods Spring 2008 Recitation 1—Solutions

1. Translate the following into propositional logic. First define the meaning of the identifiers you use for the prime constituents.

Tom, who is a teacher, is at home on weekends and when it snows.

Answer

Let

p = Tom is a teacher.
q = Tom is at home.
r = It is the weekend.
s = It snows.

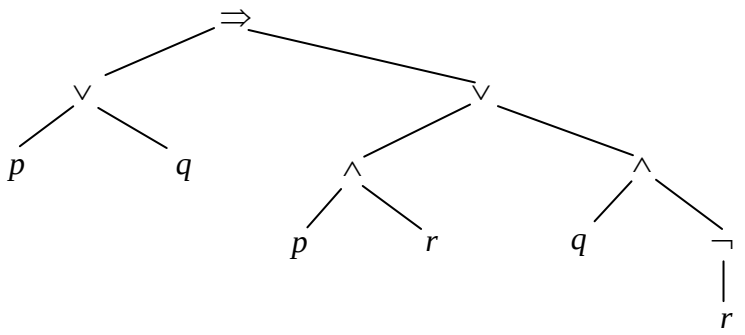
Then

$p \wedge (r \vee s \Rightarrow q)$

2. Draw the parse tree for the following formula then give the truth table for it.

$p \vee q \Rightarrow p \wedge r \vee q \wedge \neg r$

Answer



p	q	r	$\neg r$	$p \vee q$	$p \wedge r$	$q \wedge \neg r$	$p \wedge r \vee q \wedge \neg r$	$p \vee q \Rightarrow p \wedge r \vee q \wedge \neg r$
T	T	T	F	T	T	F	T	T
T	T	F	T	T	F	T	T	T
T	F	T	F	T	T	F	T	T
T	F	F	T	T	F	F	F	F
F	T	T	F	T	F	F	F	F
F	T	F	T	T	F	T	T	T
F	F	T	F	F	F	F	F	T
F	F	F	T	F	F	F	F	T