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Assignment : 1.1

Questions: 2,14,24,32,36

- 2) A. Not a proposition
 B. Not a proposition
 C. Proposition. False value
 D. Not a proposition
 E. Proposition. False value.
 F. Not a proposition

- 14) A) $r \wedge \neg q$
 B) $p \wedge q \wedge r$
 C) $r \rightarrow p$
 D) $p \wedge \neg q \wedge r$
 E) $(p \wedge q) \rightarrow r$
 F) $r \leftrightarrow (p \vee q)$

- 24) A) If I remember to send you the address, then you sent me an e-mail message.
 B) If you were born in the United States, then you are a citizen of this country.
 C) If you keep your textbook, then it will be a useful reference in your future courses.
 D) If the Red Wing's goalie plays well, then they will win the Stanley Cup.
 E) If you get the job, then you had the best credentials.
 F) If there is a storm, then the beach erodes.
 G) If you log on to the server, then you have a valid password

H) If you don't start your climb too late, then you will reach the summit.

32) A) $p \rightarrow \neg p$

p	$\neg p$	$p \rightarrow \neg p$
T	F	F
F	T	T

B) $p \leftrightarrow \neg p$

P	$\neg p$	$P \leftrightarrow \neg p$
T	F	F
F	T	F

C) $p \Phi (p \vee q)$

p	q	$p \vee q$	$p \Phi (p \vee q)$
T	T	T	F
T	F	T	F
F	T	T	T
F	F	F	F

D) $(p \wedge q) \rightarrow (p \vee q)$

P	q	$p \wedge q$	$p \vee q$	$(p \wedge q) \rightarrow (p \vee q)$
T	T	T	T	T
T	F	F	T	T
F	T	F	T	T
F	F	F	F	T

E) $(q \rightarrow \neg p) \leftrightarrow (p \leftrightarrow q)$

p	q	$\neg p$	$q \rightarrow \neg p$	$P \leftrightarrow q$	$(q \rightarrow \neg p) \leftrightarrow (p \leftrightarrow q)$
T	T	F	F	T	F
T	F	F	T	F	F
F	T	T	T	F	F
F	F	T	T	T	T

F) $(p \leftrightarrow q) \Phi (p \leftrightarrow \neg q)$

p	q	$p \leftrightarrow q$	$\neg q$	$p \leftrightarrow \neg q$	$(p \leftrightarrow q) \Phi (p \leftrightarrow \neg q)$
T	T	T	F	F	T
T	F	F	T	T	T
F	T	F	F	T	T
F	F	T	T	F	T

36) A) $(p \vee q) \vee r$

p	q	r	$p \vee q$	$(p \vee q) \vee r$
T	T	T	T	T
F	T	T	T	T
T	F	T	T	T
T	T	F	T	T
F	F	T	F	T
F	T	F	T	T
T	F	F	T	T
F	F	F	F	F

B) $(p \vee q) \wedge r$

p	q	r	$(p \vee q)$	$(p \vee q) \wedge r$
T	T	T	T	T
F	T	T	T	T
T	F	T	T	T
T	T	F	T	F
F	F	T	F	F
F	T	F	T	F
T	F	F	T	F
F	F	F	F	F

c) $(p \wedge q) \vee r$

p	q	r	$(p \wedge q)$	$(p \wedge q) \vee r$
T	T	T	T	T
F	T	T	F	T
T	F	T	F	T
T	T	F	T	T
F	F	T	F	T
F	T	F	F	F
T	F	F	F	F
F	F	F	F	F

d) $(p \wedge q) \wedge r$

p	q	r	$(p \wedge q)$	$(p \wedge q) \wedge r$
T	T	T	T	T
F	T	T	F	F
T	F	T	F	F
T	T	F	T	F
F	F	T	F	F
F	T	F	F	F
T	F	F	F	F
F	F	F	F	F

e) $(p \vee q) \wedge \neg r$

p	q	r	$(p \vee q)$	$\neg r$	$(p \vee q) \vee r$
T	T	T	T	F	F
F	T	T	T	F	F
T	F	T	T	F	F
T	T	F	T	T	T
F	F	T	F	F	F
F	T	F	T	T	T
T	F	F	T	T	T
F	F	F	F	T	F

f) $(p \wedge q) \vee \neg r$

p	q	r	$(p \wedge q)$	$\neg r$	$(p \wedge q) \vee \neg r$
T	T	T	T	F	T
F	T	T	F	F	F
T	F	T	F	F	F
T	T	F	T	T	T
F	F	T	F	F	F
F	T	F	F	T	T
T	F	F	F	T	T
F	F	F	F	T	T