Course : CSE 103
Student ID: 1705043
Verifying student ID: 1705064
Chapter: 1
Section: 1
Exercise : 13
BOOK :DISCRETE MATHEMATICS AND IT'S APPLICATIONS BY ROSEN

QUESTION:

Let p and q be the propositions
p :You drive over 65 miles per hour.
q :You get a speeding ticket.
Write these propositions using p and q and logical connectives (including negations).
a) You do not drive over 65 miles per hour.
b) You drive over 65 miles per hour, but you do not get a speeding ticket.
c) You will get a speeding ticket if you drive over 65 miles per hour.
d) If you do not drive over 65 miles per hour, then you will not get a speeding ticket.
e) Driving over 65 miles per hour is sufficient for getting a speeding ticket.
f) You get a speeding ticket, but you do not drive over 65 miles per hour.
g) Whenever you get a speeding ticket, you are driving over 65 miles per hour.

SOLUTION:

a) This is just the negation of p, so we write ¬p.
b) This is a conjunction ("but" means "and"): p ∧ ¬q.
c) The position of the word "if" tells us which is the antecedent and which is the consequence: p -> q.
d) ¬p→¬q
e) The sufficient condition is the antecedent: p→ q.
f) q∧¬p
g) "Whenever" means "if": q → p.