Assignment on CSE 103 : Discrete Mathematics

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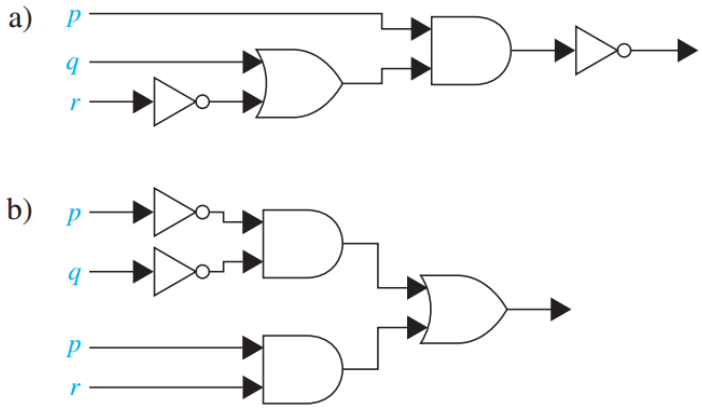
Discrete Mathematics and its Application by Kenneth Rosen
chapter 1
Section 1.2,problem 41:

41. Find the output of each of these combinatorial circuits.



Answer:
a.The output of the or gate is $q \bigvee \neg r$.
Therefore the output of the AND gate is $p \bigwedge (q \bigvee \neg r)$.
Therefore the output of the circuit is $\neg(p \bigwedge (q \bigvee \neg r))$.
b.The upper AND gate produces the output of $\neg p \bigwedge \neg q$ and the lower AND gate produces output of $p \bigwedge r$.
Therefore the output of the circuit is $(\neg p \bigwedge \neg q) \bigvee (p \bigwedge r)$