1. Show that $(p \rightarrow (q \wedge r)) \leftrightarrow ((p \rightarrow q) \wedge (p \rightarrow r))$ is a Tautology.
2. Prove that $(\neg r \rightarrow (p \rightarrow q))$ and $((p \rightarrow (q \vee r))$ are equivalent.
3. Write converse, inverse, contrapositive for the given statement
   "If it rains then the match will be cancelled"
4. Find DNF and CNF of $(p \rightarrow q) \wedge (\neg p \wedge q)$
5. Find the PDNF & PCNF of $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$.
6. S.T the set of premises $p \rightarrow q$, $p \rightarrow r$, $q \rightarrow \neg r$, p is inconsistent.
7. S.T the conclusion C follows from H1, H2 and H3 in the following case. H1: $\neg p \vee q$, H2: $\neg (q \wedge \neg r)$, H3: $\neg r$, C: $\neg p$.
8. S.T $S \vee R$ is tautologically implied by $P \vee Q$, $P \rightarrow R$, $Q \rightarrow S$.
9. S.T. $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q$, $Q \rightarrow R$, $P \rightarrow M$ and $\neg M$.
10. S.T. $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$ and Q.