CS480/580 Introduction to Artificial Intelligence
Final Exam Practice

Note: You can add as many lines in your answers as you want and expand this word doc.
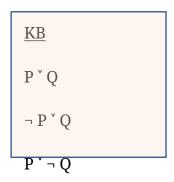
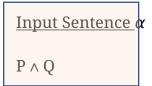For one search problem and one game tree problem, please review Midterm Exam.

1. Decide whether each sentence is satisfiable or unsatisfiable and valid or not valid. Support your answers with a truth table.

   a. $(P \lor Q) \land (\neg Q \land \neg P)$

   b. $(\neg P \lor \neg Q) \Rightarrow \neg(P \land Q)$

2. Apply resolution refutation to check if the input sentence is entailed by the knowledge base. Write each step of the resolution.

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$P \vee Q$

$\neg P \vee Q$

$P \vee \neg Q$

Input Sentence α

$P \wedge Q$

3. Decision Trees.
   We have six training examples. Each example has three attributes:
   Weather, Temperature, and Wind Level. Based on the attribute values,
   each example has a corresponding label that is Yes for "go out for running"
   or No for "do not go out for running".

Training Data			
Weather	Temperature	Wind Level	Go out for running?
Sunny	High	Low	No
Sunny	Medium	Medium	Yes
Cloudy	High	Medium	Yes
Cloudy	Medium	High	Yes
Rainy	High	Low	No
Rainy	High	Medium	No

   a. Draw a decision tree that agrees with all the training examples.

b. You have one test example and write the predicted label for it based on the decision tree.

Test example 1: Weather = Cloudy, Temperature = High, Wind Level = High,

Go out for running? _____