

## 2020 Spring Artificial Intelligence, HW-1

A. Show that the following formulas are tautologies. (4 Points)

①  $\neg(A \vee B) \Leftrightarrow \neg A \wedge \neg B$

②  $(A \vee B) \wedge (\neg B \vee C) \Rightarrow (A \vee C)$

B. Transform the following statement into conjunctive normal form. (2 Points)

$$A \wedge (A \Rightarrow B) \Rightarrow B$$

C. Consider the following knowledge base (KB).

$$KB = \{A, B, C, D, E, A \wedge B \wedge C \Rightarrow F, C \wedge F \wedge E \Rightarrow H\}$$

Show  $KB \models H$  by SLD resolution-refutation. (4 Points)

Warning: Do not discuss the solutions with other students and do not copy other's solutions.