CSE 352 – Artificial Intelligence

RESOLUTION HOMEWORK

1. Find all possible resolvents of

A) $\Delta = \{ \{a, \neg b\}, \{a, b, c\}, \{\neg a, c\}, \{\neg c, \neg b\} \}$

B) $\Delta = \{ \{a, \neg a, \neg b\}, \{a, b, c\}, \{\neg a, \neg b, \neg c\}, \{b\} \}$

2. Use a proper Resolution strategies do decide whether Δ is unsatisfiable or satisfiable.

A) $\Delta = \{ \{a, \neg b\}, \{\neg a, \neg b \}, \{b, c\}, \{a, \neg c\}, \{\neg a\} \}$

B) $\Delta = \{ \{a, \neg b\}, \{\neg a, \neg b \}, \{b, c\}, \{a, \neg c\} \}$

C) $\Delta = \{ \{a, b\}, \{\neg a, b \}, \{b, \neg c\}, \{a, \neg c\} \}$

3. Use resolution (proper strategy) to decide VALIDITY of the following argument:

A1: $(((a \rightarrow \neg b) \rightarrow (b \rightarrow \neg a)) \vee ((a \rightarrow \neg c) \vee b))$

A2: $((a \rightarrow b) \rightarrow a)$

B: $(\neg(a \rightarrow (\neg b \wedge c)) \rightarrow (a \wedge (b \wedge \neg c)))$

Remark: To verify the VALIDITY of $((A1 \wedge A2) \rightarrow B)$, we have to test if $\neg ((A1 \wedge A2) \rightarrow B)$ is unsatisfiable.