Artificial Intelligence

ASSIGNMENT 6

Due Date: 26 May 2021

QUESTION 1

Translate the following statements into predicate logic statements:

Boxer is a horse. At least one of the horses registered for today's race is not a thoroughbred. Every horse registered for today's race has won a race this year. Only horses have four legs and like to run. [10]

QUESTION 2

Translate the following into Clausal Form:

$$\neg[(\ \exists x, y\ A(x) \Leftrightarrow B(x,y)) \vee (\ \forall z\ C(z))] \wedge (\ \forall x, y\ D(x,y) \Rightarrow E(y))$$

[12]

QUESTION 3

Consider these formulas that are in Clausal Form (variables are in lower-case):
C_1: $A(x,z) \vee \neg B(y) \vee C(x,y,z), \vee \neg D(y,z) \vee E(x)$
C_2: $G(u) \vee \neg H(v,w) \vee I(u,w)$
C_3: $\neg G(Bob) \vee H(Cat, House)$
C_4: $\neg I(Bob, m) \vee D(Bob, m)$
C_5: $\neg A(n, House)$
C_6: $B(Bob) \vee \neg C(p, Bob, House)$
B: $E(Germany)$

Make use of the Resolution procedure and appropriate substitutions to prove that:

$C_1, C_2, C_3, C_4, C_5, C_6 \models B.$

[12]

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