COMP3411/9814

23T1

QUIZ 4

Consider these two sentences on three proposition symbols K, L, M

(i) L
$$\rightarrow$$
 K \wedge \neg M

(ii)
$$\neg M \land \neg L \rightarrow K$$

What is the full list of models that satisfy both of these sentences?

- {}, {L}, {L, M}, {K, L, M}
- (K), (M), (K, L)
- (K), (K, L), (K, M)
- {K}, {M}, {K, L}, {K, M}

Which of the following does not represent "You won't pass the exam unless you study" where S is "you study" and P is "you pass the exam"?

- S ⇒ P
- P ⇒ S
- _ ¬S ⇒ ¬P
- ¬(P ∧ ¬S)

Which expression is logically equivalent to the sentence:

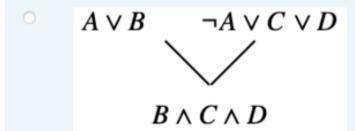
"Every clown rides a big, red bicycle"

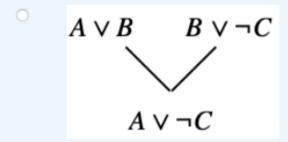
- ∀c∃b Clown(c) ∧ Big(b) ∧ Red(b) ∧ Bicycle(b) ∧ Rides(c, b)
- □ ∃b∀c Clown(c) ∧ Big(b) ∧ Red(b) ∧ Bicycle(b) ∧ Rides(c, b)
- \lor \lor c \exists b Clown(c) \rightarrow Big(b) \land Red(b) \land Bicycle(b) \land Rides(c, b)
- \bigcirc $\forall c \forall b \ Clown(c) \rightarrow Big(b) \land Red(b) \land Bicycle(b) \land Rides(c, b)$

Consider this knowledge base:

$${A \lor B, \neg A \lor C \lor D, B \lor \neg C, \neg B \lor \neg D}$$

Which of the following is a valid resolution from this knowledge base?





$$\neg A \lor C \lor D \qquad B \lor \neg C$$

$$\neg A \lor B \lor D$$

What is the clausal form of $\neg \exists x \exists y \ (animal(x) \land plant(y) \land eats(x, y))$ Here c and d are Skolem constants.

- $\bigcirc \qquad \{\operatorname{animal}(x) \vee \neg \operatorname{plant}(y) \vee \neg \operatorname{eats}(x, y)\}$
- {animal(x), plant(y), eats(x, y)}
- {¬animal(x) ∨ ¬plant(y) ∨ ¬eats(x, y)}
- {animal(c), plant(d), eats(c)}