

CISC 301

Translating English Sentences – Sample Questions

In answering these questions, do not use any other function, constant or predicate symbols than the ones mentioned in the questions. Clearly parenthesize your formulae, especially to ensure that there is no ambiguity about the scope of the quantifiers.

A. Translate the following 5 sentences. In your translation, use $S(x)$ to stand for “ x is a shark”, $T(x)$ to stand for “ x is a tadpole”, $L(x)$ to stand for “ x is large”, $W(x)$ to stand for “ x is white”, $F(x)$ to stand for “ x is a fish”, $M(x)$ to stand for “ x is miserable”, and $LDW(x)$ to stand for “ x lives in deep water”.

1. Every shark eats some tadpole.
2. All large white fish are sharks.
3. Some large white fish live in deep water.
4. Any tadpole eaten by a deep water fish is miserable.
5. Some tadpole is miserable.

B. Translate the following 5 sentences using the following symbols: $P(x)$ to stand for “ x is a professor”, $H(x)$ to stand for “ x is happy”, $S(x)$ to stand for “ x is a student”, $L(x,y)$ to stand for “ x likes y ”. Also use constants l for “logic” and s for “Smith”.

1. Every professor is happy if some student likes logic.
2. Some professor is happy if some student likes logic.
3. Some professor is happy if all students like logic.
4. Professor Smith is happy if some student likes logic.
5. No student who dislikes logic is happy.

C. Translate the following sentences using these symbols: constants, $c3$, $m2$, c , and l (for CISC301, MATH210, CISC, and LING respectively); unary predicate symbols, Co , S and I (for is-a-course, is-a-student, and is-an-instructor respectively); and binary predicate symbols, C , $T1$, $T2$, and M where

$C(x, y)$ stands for course x is offered by department y ,

$T1(x, y)$ corresponds to course x is taught by y ,

$T2(x, y)$ corresponds to course x is taken by y ,

$B(x, y)$ corresponds to x is an instructor from Department y , and

$M(x, y)$ corresponds to x is the major of y

1. Every CISC major has taken a course taught by some instructor who has taught CISC301.

2. No CISC major had taken a course taught by a LING instructor.
3. Some instructor of a CISC course has taught a LING course.
4. Some CISC major has taken all CISC courses.
5. No instructor who teaches CISC301 has taught a course taken by a LING student.
6. Every LING major has taken a course taught by some instructor who has taught CISC301.