Unit 4: Symbolizing English Sentences

Determine the simple sentences

- *May require rewriting a compound sentence into simpler sentences.*
- *Use parenthesis or underline the simple sentences when possible.*
- *May also be helpful to circle the sentential operators to offset them from the component sentences.*

-Define capital letters to stand for the simple sentences

- ***Letters are simply a short ways of writing the sentence, that is, THEY ARE NOT VARIABLES.***
- ***Letters should be assign to variables using the following syntax: <capital letter>≡<simple sentence>***

Working with non-truth functional operators

- *Treat the non-truth functional compound as if it were a singular statement.*
- *Example: Joe went to class because there was going to be a movie.*
- *“Because” is not a truth functional operator, so the symbolization would be: J≡Joe went to class because there was going to be a movie.*

Symbolizing Sentential Operators

- *The same logical force may be expressed by a number of different words for each of the connectives.*

Conjunction

- ***However/ nevertheless/ still*/but still/ although/even/though/also/and also/not only-but also/while*/despite the fact/ moreover***
- ***Words such as "while" and "still" may or may not be acting as sentential operators.***

Conjunction (cont.)

- ***"Still" may be act as an adverb as in "It is still dark outside." On the other hand, "while" may indicate that two activities are not only taking place, but are doing so simultaneously as in "John waited in the car, while Mary went into the store".***

Disjunction

- *or either or or else*
- *The "or" may be expressed as either inclusive or exclusive.*
- *When it is meant to be exclusive, we can express the it as $(p \vee q) \cdot \sim(p \cdot q)$.*

Negation

- *In many instances, the negation is tied in with some other connective.*
- *The difficulty with negation is determining what part of the sentence the negation applies to.*
- *"Not both p and q" is symbolized as ~(p·q). It may also be symbolized as (~p∨~q).*

Negation (cont.)

- ***"Neither p nor q" is symbolized as ~(p∨q). It may also be symbolized as (~p·~q).***
- ***To see this more clearly, it may help to replace the variables with actual sentences: see pp. 58-59 in Klenk.***

Material Conditional

- *if*/unless**/provided/only if*/given that/ supposing that/in the event that*
- *These words normally signify that what follows is the antecedent in the conditional.*

*SPECIAL CASE – “only if”

- *Difference between “if” and “only if”.*
- *“q if p” is symbolized as (p⊃q)*
- *“q only if p” is symbolized as q⊃p or alternately (~p⊃~q)*

**SPECIAL CASE- “unless”

- *Rephrased as “if not”*
- *“p unless q” is rephrased as “p if not q” and symbolized (~q⊃p)*
- *“p unless q” may also be symbolized as a disjunction (p∨q)*
- *For examples of both special cases see pp. 63-64 in Klenk.*

Biconditional

- *if and only if/just in case/just in the event that*
- *“p if and only if q” is symbolized (p≡q). It may also be symbolized as the conjunction of two material conditionals ((p⊃q)·(q⊃p)).*
- *Examples of biconditional symbolizations can be found on p. 64–65 in Klenk.*

Example Exercises

- ***Man is descended either from small primates or great apes.***

- ***If high-speed trains are developed, then automobile use will decrease.***

More Examples

- ***John drives his van only if he is camping or needs to haul large loads.***

- ***John will make supper and wash the dishes unless it is a holiday or he is working late.***