

PHIL 120 ASSIGNMENT 4 – SYMBOLIC LOGIC I

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Question 1

b

Question 2

b

Question 3

c

Question 4

a

Question 5

Domain: Let the domain be $\{a, b\}$

The extension of $A(x) : \{a, b\}$

The extension of $P(x) : \{a\}$

The extension of $Q(x) : \{\}$

Sentence 1 is always true because of the disjunction with $A(x)$ being true for both x .

Sentence 2 is always false because of the disjunction with $Q(x)$ being false for both x .

Therefore, these sentences are not equivalent.

Question 6

Domain: Let the domain be $\{a, b\}$

The extension of $P(x) : \{a\}$

The extension of $G(x) : \{a\}$

$\forall x(P(x) \rightarrow G(x))$ is true: vacuously true for $x = b$, and holds for $x = a$.

$\exists x P(x)$ is true since $P(a)$ is true.

$\forall x G(x)$ is false since $G(b)$ is false.

Therefore, the entailment does not hold.

Question 7

Key:

- Domain: All people.
- $G(x)$: x is a genius.
- $M(x)$: x is misunderstood.
- $L(x)$: x suffers from loneliness.
- t : Tesla.

Symbolization of the Argument:

$$1. \forall x(G(x) \rightarrow M(x))$$

$$2. \forall x(M(x) \rightarrow L(x))$$

$$3. G(t)$$

$$\therefore L(t)$$

Question 8

$$H(a, b) \rightarrow \neg H(b, a)$$

Question 9

$\exists E, 3, 4-8$

Question 10

$\forall I, 9$