

Quiz #6
PHIL-205-01:Symbolic Logic

Blizzard MacDougall

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Consider the following interpretation:
The domain comprises Hasiasson-Lindenbaum (hereafter, HL), Ramsey, and Stebbing.
 A is a one place predicate, true of and only of HL.
 B is a one place predicate, true of only Ramsey and Stebbing.
 C is a one place predicate, true of only HL and Stebbing.
 D is a one place predicate, true of no one.
 E is a one place predicate, true of HL, Ramsey, and Stebbing.
 h refers to HL.
 r refers to Ramsey.
 s refers to Stebbing.

Determine whether each of the following sentences are true or false, given the above interpretation.

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|---|------------------|
| 1. Br | 1. <u>True</u> |
| 2. $\neg Dh \iff \neg(Ar \vee Bh)$ | 2. <u>True</u> |
| 3. $\forall x(Ax \implies Cx)$ | 3. <u>True</u> |
| 4. $\neg\forall x(Ax \implies Cx)$ | 4. <u>False</u> |
| 5. $\exists xBx \implies \neg\exists xDx$ | 5. <u>True</u> |
| 6. $\forall x(Bx \wedge Cx)$ | 6. <u>False</u> |
| 7. $\forall x\neg(Ax \wedge Dx)$ | 7. <u>True</u> |
| 8. $\forall x(Ax \implies Bx) \implies \exists y(Ay \wedge By)$ | 8. <u>True</u> |
| 9. $\exists x(Dx \implies Cx)$ | 9. <u>True</u> |
| 10. $\forall xEx \implies \exists xDx$ | 10. <u>False</u> |
| 11. $\exists xCx \wedge \exists x\neg Cx$ | 11. <u>False</u> |
| This is dependent upon the assumption that x refers to the same person in both instances. If x can mean different people in the different terms, then it would be true. | |
| 12. $\exists xCx \wedge \exists x\neg Ex$ | 12. <u>False</u> |
| 13. $\exists x\exists y[Ex \wedge Ey \wedge \neg x = y \wedge \forall z(Ex \implies [z = x \vee z = y])]$ | 13. <u>False</u> |
| This means there are exactly two E s. This, however is incorrect, as there are 3 E s in the domain. | |
| 14. $\exists x\exists y(Bx \wedge By \wedge \neg x = y)$ | 14. <u>True</u> |
| This means that there is at most two B s, which is true in this interpretation. | |
| 15. $\forall x\forall y\forall z[(Ex \wedge Ey \wedge Ez) \implies (x = y \vee y = z \vee x = z)]$ | 15. <u>False</u> |