Philosophy 240, Kenny Easwaran
Midterm 2, Sample 2

November 8, 2017

Name: _____ Section: _____

1. Validity. Make up an argument with the described premises and conclusion, or say why such an argument is impossible. (10 pts each)

   (a) Valid, with one false premise, one true premise, and a false conclusion.

   (b) Invalid, with two false premises, and a true conclusion.

   (c) Valid, with two true premises, and a false conclusion.

2. Translations (10 pts each)

   (a) Translate the following sentences from English into the formal language of Tarski's World.

      i. If a is left of b, then it's in back of c but in front of d.

      ii. a is a dodecahedron if and only if b is not.

      iii. b is a tetrahedron only if either c or d is.

(b) Give ordinary English translations of the following sentences in the formal language of Tarski's World.

i. ¬(Small(a)∧Cube(a))→ ¬(Small(b)∧Cube(b))

ii. (Large(a)→Cube(a))∧(Small(b)→Tet(b))

iii. (Large(c)∨Large(d))→(Dodec(c)∨Dodec(d))

3. Complete the following two incomplete proofs. Fill in the rule used on each line, and which prior lines it depends on. (20 pts each)

1	$A \vee C$	_____
2	$\neg(A \wedge D)$	_____
3	$\quad A$	_____
4	$\quad\quad D$	_____
5	$\quad\quad A \wedge D$	_____
6	$\quad\quad \bot$	_____
7	$\quad \neg D$	_____
8	$\quad C \vee \neg D$	_____
9	$\quad C$	_____
10	$\quad C \vee \neg D$	_____
11	$C \vee \neg D$	_____

1	$A \to B$	_____
2	$B \to \neg A$	_____
3	$\quad A$	_____
4	$\quad B$	_____
5	$\quad \neg A$	_____
6	$\quad \bot$	_____
7	$\neg A$	_____

4. If the probability that a is medium given that it is a dodecahedron is 1/4, and the probability that it is medium given that it is *not* a dodecahedron is 1, and the probability that it is a dodecahedron is 2/3 then what is the probability that it is a dodecahedron given that it's medium? (20 pts)