One person’s attempt so beware mistakes

1.a

Text, letter

Description automatically generated

1.b.i

Text, letter

Description automatically generated

1.c

and with the given property of Cnp :

2.a.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Candidate |  | a | d | b.c | a.c | a.b,c | a.b,d | a.b.c.d |
| Model | N | N | Y | Y | Y | Y | Y | Y |
| Supported |  |  | Y | Y | Y | N | Y (from comment) | N |
| Minimal |  |  | Y | Y | Y |  |  |  |
| Stable |  |  | Y | Y | Y |  | Y |  |
|  |  |  |  |  |  |  |  |  |

2.b

P2: {a}, {b}

P3: {a, b’}, {a’, b}, {a, b}

2.c.i

If X is an answer set of P, then M(PX) = X

Assuming L ⊆ X, we know PX ⊆ PL

Assuming monotonicity (?) M(PX)⊆ M(PL)

Therefore by substituting in M(PX) = X, we get X⊆ M(PL)

2.c.ii

If X is an answer set of P, then M(PX) = X

Assuming X ⊆ U, we know PU ⊆ PX

Assuming monotonicity (?) M(PU)⊆ M(PX)

Therefore by substituting in M(PX) = X, we get M(PU)⊆ X

2.c.iii

We know from the previous parts that L ⊆ X and M(PU)⊆ X

Therefore, we can get L ∪ M(PU)⊆ X

We also know X ⊆ U and X⊆ M(PL)

I’m not sure how to get the intersection here though...

4.a.

fc = {intact, hits(a), hits(b)}  
ac = {throw(a), throw(b)}

inertial intact  
exogenous throw(a)  
exogenous throw(b)

throw(a) causes hits(a) ∧ ¬intact  
throw(b) causes hits(b) ∧ ¬intact

4.b.

Can’t do – weren't taught logic programs (acc to piazza)

4.c.

throw(a) causes hits(a) ∧ ¬intact ∧ ¬rock(a)  
throw(b) causes hits(b) ∧ ¬intact ∧ ¬rock(b)

nonexecutable throw(a) if ∧ ¬rock(a)  
nonexecutable throw(b) if ∧ ¬rock(b)

4.d.

throw(a) causes ¬rock(a)  
throw(a) may cause hits(a) ∧ ¬intact

4.e.

throw(b) causes in\_flight(b)  
in\_flight(b) causes hits(b) ∧ ¬intact if intact