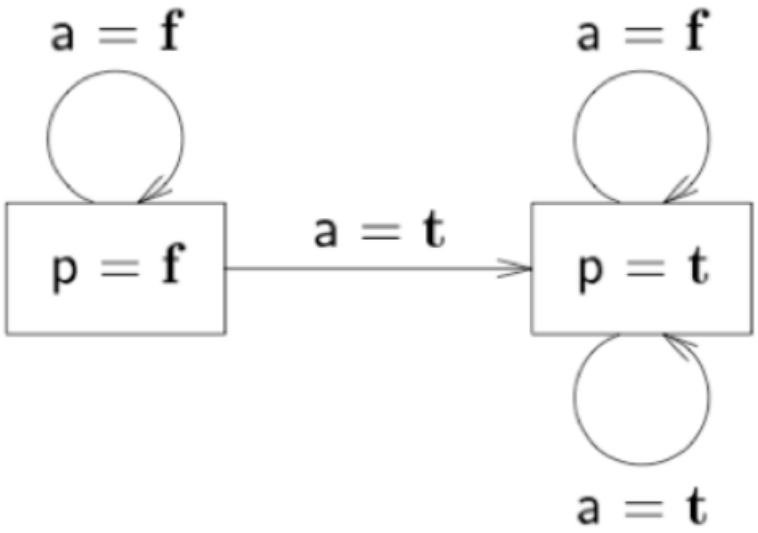
Final Exam Practice Questions

1. Transition Systems: Directed graphs whose vertices correspond to the actions and edges are labeled by states.

   Is the definition of Transition Systems true or false?

2. Which are the stable models for the given transition system?



   a. { p(f, 0), p(t, 1)}
   b. { p(f, 0), a(0)}
   c. { p(t, 0), p(t, 1), a(0)}
   d. { p(f, 0), p(f, 1)}

3. Choose all the fluents from the given options.
   a. Monkey has the banana
   b. Monkey grasps the banana
   c. The location of the box
   d. Monkey is on the box

4. For the state, given above, choose the correct common-sense law of intertia.
    a. { p(t, 1) } :- p(f, 0).

       { p(f, 1) } :- p(f, 0).

       :- not 1 { p(t, 1); p(f, 1) } 1.

    b. { p(f, 1) } :- p(f, 0).

       { p(f, 1) } :- p(t, 0).

       :- not 1 { p(t, 1); p(f, 1) } 1.

    c. { p(t, 1) } :- p(t, 0).

       { p(f, 1) } :- p(f, 0).

       :- not 1 { p(t, 1); p(f, 1) } 1.

5. Which option is the most probable stable model of the following LPMLN Program?

   1: p

   α : p <- q

   α : ⊥ <- ~q

    a. Ø
    b. {p}
    c. {q}
    d. {p. q}

6. If A and B are random variables, which option about probability is impossible?
    a. P(A | B) = P(A, B)
    b. P(B | A) > P(A | B)
    c. P(A | B) < P(A, B)
    d. P(B) > P(A, B)

7. Consider the given full-joint distribution for Boolean variables A, B, and C. What is the value of P(A = 1 | B = 1, C = 0)?

A	B	C	P(A,B,C)
0	0	0	0.2
0	0	1	0.1
0	1	0	0.15
0	1	1	0.05
1	0	0	0.05
1	0	1	0.25
1	1	0	0.05
1	1	1	0.15

   a. 0.2
   b. 0.25
   c. 0.5
   d. 0.75

8. Which option about the use of ontologies in industrial applications is correct?
   a. The axioms in WordNet are written in FOL.
   b. The axioms in CYC are automatically generated from web sources.
   c. DBpedia automatically evolves as Wikipedia changes.
   d. The nodes in a knowledge graph captures entities, attributes, and relationships

9. Which is correct regarding the Resource Description Framework?
   a. User defines class hierarchies in RDF to disallow nonsensical statements.
   b. We can reification to turn a sequence of information into statements in RDF.
   c. Every statement has an IRI (Internationalized Resource Identifier).
   d. Resources can be thought of as objects.

10. Which option is correct?
   a. A ⊓ ∃r.(B ⊔ C) is subsumed by A ⊓ ∃r.B
   b. A ⊓ ∃r.B is subsumed by A ⊓ ∀r. B
   c. A ⊓ ∃r.A ⊓ ∀r. B is subsumed by A ⊓ ∃r.B
   d. A ⊓ ∀r. B is subsumed by A ⊓ ∃r.B