Module 6 Graded Quiz

Due Apr 10 at 11:59pm **Points** 10 **Questions** 10
Available Mar 27 at 12am - Apr 10 at 11:59pm
Time Limit 300 Minutes **Allowed Attempts** 3

This quiz was locked Apr 10 at 11:59pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	3 minutes	10 out of 10

Score for this attempt: **10** out of 10
Submitted Apr 10 at 12:46pm
This attempt took 3 minutes.

Question 1

1 / 1 pts

Consider the following **MLN** program with two object constants alice and bob. Compute the unnormalized probability measure (i.e., weight) of the interpretation I = {smoke(alice), influence(alice, bob), smoke(bob)} under **MLN**. (x, y range over both object constants.)

2: smoke(y) ⟵ smoke(x) ∧ influence(x,y)

1: smoke(alice)

α: influence(alice, bob)

- exp(1)

Correct!

- exp(α+9)
- exp(3)
- exp(α+3)

Question 2

1 / 1 pts

Consider the following **LPMLN** program with two object constants alice and bob. Compute the unnormalized probability measure (i.e., weight) of the interpretation I = {smoke(alice), influence(alice, bob), smoke(bob)} under **LPMLN**. (x, y range over both object constants.)

2: smoke(y) $\longleftarrow$ smoke(x) $\wedge$ influence(x,y)

1: smoke(alice)

α: influence(alice, bob)

- 0
- exp(α+9)
- exp(α+3)
- exp(α+1)

Correct!

Question 3

1 / 1 pts

Consider the following LPMLN program. Apply the completion method to convert the LPMLN program into an equivalent Markov Logic Network. Which option is the correct MLN program?

1: p $\leftarrow$ ¬q

2: q $\leftarrow$¬p

4: q $\leftarrow$ ¬r

1: p ⟵ ¬q

2: q ⟵ ¬p

4: q ⟵ ¬r

α: p → ¬q

α: q → ¬p ∨ ¬r

1: p ⟵ ¬q

2: q ⟵ ¬p

4: q ⟵ ¬r

α: p → ¬q

α: q → ¬p

α: q → ¬r

Correct!

1: p ⟵ ¬q

2: q ⟵ ¬p

4: q ⟵ ¬r

α: p → ¬q

α: q → ¬p ∨ ¬r

α: r → ⊥

1: p ⟵¬q

2: q ⟵ ¬p

4: q ⟵ ¬r

α: p → ¬q

α: q → ¬p

α: q → ¬r

α: r → ⊥

Question 4

1 / 1 pts

Which option is the most probable stable model of the following LPMLN program?

1: p ← ¬q

α: q ← ¬p

-4: p← ¬r

- {p, q}
- {p}
- {q}
- ∅

Correct!

Question 5

1 / 1 pts

Which option is the weight of the most probable stable model of the following LPMLN program?

2: p ← q

-2: q ← ¬r

-5: ⊥ ← p

- -5
- exp(2)
- 2
- exp(0)

Correct!

Question 6

1 / 1 pts

Consider the following LPMLN program. Translate it into an ASP program containing weak constraints. Which option is the correct translated ASP program?

10: q ← p

1: r ← p

5: p

-20: ⊥ ← ¬r

10: q ← p

1: r ← p

5: p

-20: ⊥ ← ¬r

α: p → ⊤

α: q → p

α: r → p

unsat(1) :- p, not q.

:~ unsat(1). [-10]

unsat(2) :- p, not r.

:~ unsat(2). [-1]

unsat(3) :- not p.

:~ unsat(3). [-5]

unsat(4) :- not r.

:~ unsat(4). [20]

Correct!

```
unsat(1) :- p, not q.

q :- p, not unsat(1).

:~ unsat(1). [10]


unsat(2) :- p, not r.

r :- p, not unsat(2).

:~ unsat(2). [1]


unsat(3) :- not p.

p :- not unsat(3).

:~ unsat(3). [5]


unsat(4) :- not r.

:- not r, not unsat(4).
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:~ unsat(4). [-20]

unsat(1) :- p, not q.

q :- p, not unsat(1).

:~ unsat(1). [-10]

unsat(2) :- p, not r.

r :- p, not unsat(2).

:~ unsat(2). [-1]

unsat(3) :- not p.

p :- not unsat(3).

:~ unsat(3). [-5]

unsat(4) :- not r.

:- not r, not unsat(4).

:~ unsat(4). [20]

Question 7

1 / 1 pts

Consider the following LPMLN program. Which option is the most probable stable model of the program?

10: q ← p

1: r ← p

5: p

-20: ⊥ ← ¬r

Correct!

- {p, q}
- {p, q, r}

{p}

{q}

Question 8

1 / 1 pts

Which option about probability is impossible no matter what random variables A and B are?

P(A | B) > P(A)

P(A, B) < P(A)

P(A | B) < P(A)

Correct!

P(A, B) > P(A)

Question 9

1 / 1 pts

Consider the following full joint distribution for Boolean variables A, B, and C. Which option is closest to the value of P(A = 0 | B = 1)?

A	B	C	P(A,B,C)
0	0	0	0.03
0	0	1	0.12
0	1	0	0.17
0	1	1	0.18
1	0	0	0.03
1	0	1	0.12
1	1	0	0.24
1	1	1	0.11

- 0.71
- 0.5

Correct!

- 0
- 0.35

Question 10

1 / 1 pts

Consider the same full joint distribution for Boolean variables A, B, and C as in question 9. Are A and B independent of each other?

A	B	C	P(A,B,C)
0	0	0	0.03
0	0	1	0.12
0	1	0	0.17
0	1	1	0.18
1	0	0	0.03
1	0	1	0.12
1	1	0	0.24
1	1	1	0.11

Correct!

- True

False

Quiz Score: **10** out of 10