Test2-Logic

- Due Feb 29 at 4:45pm
- Points 34
- Questions 17
- Available Feb 29 at 4pm - Feb 29 at 6pm 2 hours
- Time Limit 40 Minutes

Instructions

Choose the BEST answer, not any correct answer.

In-class exam (unless permitted otherwise), closed book, closed notes, and no communication during or after the test.

Any scratch paper used should turned in with your name.

This quiz was locked Feb 29 at 6pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	15 minutes	24 out of 34

Correct answers are hidden.

Score for this quiz: 24 out of 34
Submitted Feb 29 at 4:15pm
This attempt took 15 minutes.

Question 1
2 / 2 pts

Which of the two algorithms, Forward Chaining or Backward Chaining, is/are goal driven.

- Forward Chaining (FC)
- None of them
- Backward Chaining (BC)
- Both of them

IncorrectQuestion 2
0 / 2 pts

Backward Chaining (BC) is a complete algorithm for the Proposition logic, i.e., it can work with any propositional KB.

- No, it needs only Horn Form sentences
- No, it needs only Modus Ponens sentences
- True
- No, it needs CNF form sentences

Question 3
2 / 2 pts

Consider a 2x2 Wumpus World problem with only two types of Propositional variables, Pit and Breeze (no Wumpus).
What is the size of the full truth table?

- None of the above
- 2^4
- 2^8
- 2^2

Question 4
2 / 2 pts

KB:

R1: A R2: B R3: A ^ C => D R4: B =>C

Does this KB entails query ~D ? (~ is NOT)

- No, only by Forward Chaining
- Yes, using Backward Chaining
- Yes, using Forward Chaining
- No, using either Forward or Backward Chaining

Question 5
2 / 2 pts

Which one of the following is NOT in the CNF for the following sentence?

P ^ Q => R ^ S

[=> has the highest priority as an operator, like division / in arithmetic.]

- ~P V ~Q V R
- ~P V ~Q V S
- None of the above
- P V Q V R

Question 6
2 / 2 pts

¬ Forall x ¬ (P) is equivalent to which one below? (P is a sentence in Predicate logic over the variable x)

<Comment: The *Forall* symbol does not always work in this Canvas editor>

- None of the mentioned
- ¬∃ x (¬P)
- ∃x (P)
- ¬∃ x (P)

Question 7
2 / 2 pts

KB:

R1: A R2: B R3: B =>C R4: A ∧ C => D ∧ E

Does KB /- E? Which algorithm(s) below can answer that?

- All three inferencing algorithms, FC, BC, and Resolution
- None of the above
- Only Model Checking algorithms
- Only the Resolution algorithm

Question 8
2 / 2 pts

Some one likes everybody is equivalent to:

- ∃ x ¬ Forall y Likes(x,y)

- ∃ x Forall y Likes(x,y)
- ¬∃ x ¬ Forall y Likes(x,y)
- None of the above

Question 9
2 / 2 pts

What is correct English sentence for the following?

Forall x Forall y Sp(x, y) <=> Mother(x, y) ∧ Father(x, y)

- Sp must be also a father
- None of the above
- Sp must be a mother or a father
- Sp must be a mother and a father

Question 10
2 / 2 pts

Which one of the following text is a predicate logic sentence for, Forall x Forall y Sister(x, y) => Sibling(x, y)

- Sisters are siblings
- None of the mentioned
- Perhaps a sister is a sibling
- Siblings are sisters

Question 11
2 / 2 pts

Forall x ∃ y Enemy_country(x, y)

Which one below is the best translation in English of the above FOL sentence?

[Read Enemy_country(x,y) as y is enemy of x.]

- None of the above
- Every country has an enemy

- Every country is enemy of a specific country
- All countries are enemy to each other

Question 12
2 / 2 pts

Choose the correct logical sentence for, "No two humans are same."

- ∃ x, y Human(x) ^ Human(y) => ¬ (x = y)
- ∃ x, y Human(x) ^ Human(y) ^ ¬ (x = y)
- ∀ x, y Human(x) ^ Human(y) => ¬ (x = y)
- ∀ x, y Human(x) ^ Human(y) ^ ¬ (x = y)

IncorrectQuestion 13
0 / 2 pts

∃z Forall x ∃y P(x, y, z) may be Skolemized to which one below?

(f(-) is a Skolem function and C is a Skolem constant)

- P(x, C, f(x))
- P(C, f(x), z)
- P(C, y, C)
- P(x, f(x), C)

Question 14
2 / 2 pts

Unify the following two predicates, WITHOUT standardizing-apart:

Related(x, y, Matt), Related(y, Raeven, x)

- {x/Raeven, y/Matt}
- {x/y, x/Matt}
- Fail
- {x/Matt, y/Raeven}

IncorrectQuestion 15
0 / 2 pts

Skolemize the sentence

Forall x ∃ y Enemy_country(x, y)

(The Forall quantifier is typically not written after Skolemization)

- Enemy_country(f(y), x)
- Enemy_country(f(y), y)
- Enemy_country(x, f(y))
- Enemy_country(x, f(x))

IncorrectQuestion 16
0 / 2 pts

How many clause(s) are there in the CNF for the following sentence?

∀x Doctor(x) => ∃y Patient(y, x) ∧ Human(y) ∧ Sick(y)

- 1
- 3
- 2
- 4

IncorrectQuestion 17
0 / 2 pts

Consider linear Wumpus World problem with only three positions, x =1, 2, and 3 (i.e., not a two dimensional matrix).

Only Pete and Breeze for Propositions, P1, P2, P3, B1, B2, and B3.

KB: P1=>B2, P2=>B1^B2, P3=>B2, ~P2, B2. How many rows of the Truth Table is/are in the model of the KB?

[Hint: Use common sense. Writing 2^6 Truth Table will take too much time!]

- 3
- 2
- None of the above

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Quiz Score: 24 out of 34