

Module1-quiz-SP23

Due Jan 22 at 11:59pm

Points 10

Questions 10

Available Jan 8 at 11:59pm - Jan 23 at 2:59am

Time Limit 450 Minutes

This quiz was locked Jan 23 at 2:59am.

Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	43 minutes	4 out of 10

Score for this quiz: **4** out of 10

Submitted Jan 18 at 9:08pm

This attempt took 43 minutes.

Question 1

0 / 1 pts

Consider the following propositional logic formula: $(p \wedge q \wedge r) \vee (\neg p \wedge \neg q \wedge s) \vee (\neg r \wedge t)$

Which of the following assignments of truth values to variables p, q, r, s, and t will make the formula TRUE?

Incorrect Answer

Correct Answer

☐ $I(p)=f, I(q)=t, I(r)=f, I(s)=t, I(t)=f$

☐ $I(p)=t, I(q)=t, r=t, I(s)=t, I(t)=t$

☒ $I(p)=t, I(q)=f, I(r)=t, I(s)=f, I(t)=t$

☐ $I(p)=f, I(q)=f, I(r)=t, I(s)=f, I(t)=t$

Question 2

0 / 1 pts

P and Q are two propositions. Which of the following are equivalent?

I: $P \wedge \neg Q$

II: $\neg (\neg P \wedge Q)$

III: $(P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge Q)$

IV: $(P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$

you Answered

☒ Only I and II

☐ Only I, II and III

Incorrect Answer

☐ Only I, II and IV

☐ All of I, II, III and IV

Question 3

1 / 1 pts

Which of the following propositional logic formulas is entailed by the statement "p implies q" i.e. $(p \longrightarrow q)$?

☐ q

☐ p

☐ $\neg q$

☐ $\neg p$

Correct!

☒ $\neg p \vee q$

All interpretations of p and q that satisfy $(p \rightarrow q)$ also satisfies the formula on the right i.e. $(\neg p \vee q)$.

These interpretations are:

$I(p)=f, I(q)=f$

$I(p)=f, I(q)=t$

$I(p)=t, I(q)=t$.

For all the other answer choices, there is at least one interpretation of p and q for which $(p \rightarrow q)$ is satisfied but the formula on the right side is not.

Question 4

1 / 1 pts

Statement: $p \vee \neg p$ is a tautology if and only if $\neg p \wedge p$ is unsatisfiable.

Above statement True or False?

Correct!

☒ True

The above statement is True as there are no interpretations for $\neg p \wedge p$ that can be true and therefore it is unsatisfiable. As a result negation of $\neg p \wedge p$ must be a tautology.

☐ False

Question 5

0 / 1 pts

$F: (p_1 \wedge q_1) \vee (p_2 \wedge q_2) \vee (p_3 \wedge q_3) \vee (p_4 \wedge q_4)$

For the above Formula F how many clauses will be generated by Clausify* (F, Γ) ?

☐ 16

You Answered

☒ 8

Correct Answer

☐ 13

☐ 10

Question 6

0 / 1 pts

$$F: p \wedge (\neg p \vee q) \wedge (\neg q \vee r) \wedge (q \vee \neg r)$$

Let U be empty set of literals. What will be the result of set U after three iterations if we perform unit propagation for the above formula F .

☐ $U = \{p, \neg q, \neg r\}$
☐ $U = \{p, q, \neg r\}$

You Answered

☒ $U = \{p, \neg q, r\}$

Correct Answer

☐ $U = \{p, q, r\}$

Question 7

1 / 1 pts

Apply unit propagation on the formula

$p \wedge (p \vee q) \wedge (\neg p \vee \neg q) \wedge (q \vee r) \wedge (\neg q \vee \neg r)$ starting with an empty set U of literals. What are the resulting set U of literals from the first three iterations?

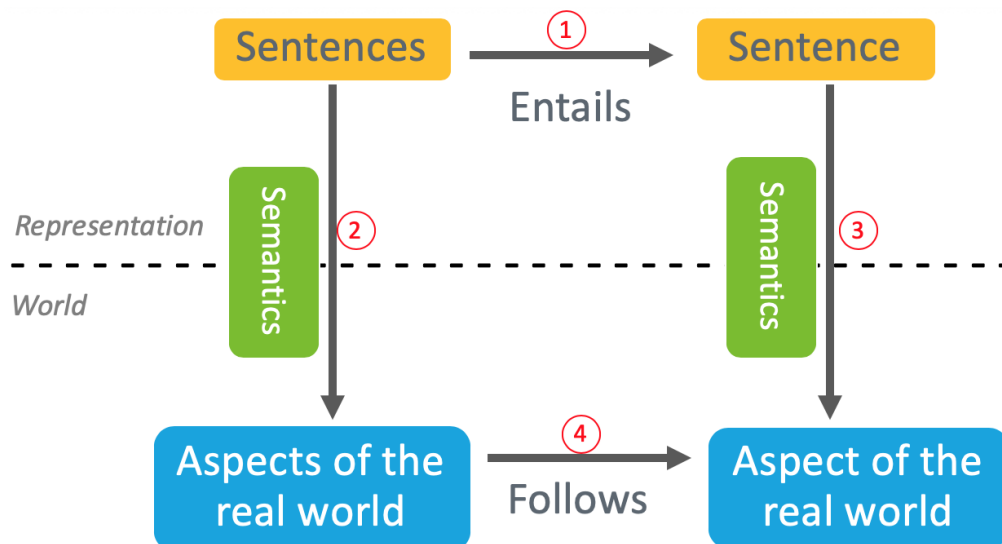
☐ $U - 1 = \{p\}, U - 2 = \{r\}, U - 3 = \{\neg q\}$
☐ $U - 1 = \{p\}, U - 2 = \{\neg q\}, U - 3 = \{r\}$
☐ $U - 1 = \{p\}, U - 2 = \{p, r\}, U - 3 = \{p, r, \neg q\}$
☒ $U - 1 = \{p\}, U - 2 = \{p, \neg q\}, U - 3 = \{p, \neg q, r\}$

Correct!

Question 8

0 / 1 pts

Consider the following graph where each arrow is denoted by a number in red. Which sequence of arrows best explains the steps for knowledge representation and reasoning?



Correct Answer

☐ 2 1 3 4

You Answered

☒ 2 3 1 4

☐ 2 4 1 3

☐ 4 3 1 2

Question 9

0 / 1 pts

Which option is to have a conclusion that is likely to be true even though we do not have enough evidence?

Correct Answer

☐ Model finding

You Answered

☒ Abductive reasoning☐ Deductive reasoning

Correct Answer

☐ Default reasoning**Question 10****1 / 1 pts**

Suppose p is an atom. Is the following statement true or false?

$\{\perp\}$ entails \perp .

Correct!☒ True☐ False**Quiz Score: 4 out of 10**