Logic in computer science 2022. November 10. (Thursday) 10:00
3nd quiz INBPA0101G-*

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Neptun ID: Draft papers:

Name:

The test consists of **4 questions**. The available time to solve the quiz is **20 minutes**. Please use a blue coloured pen; the use of any other tools is forbidden.

	a	b	c	d	e
1.)	☐	☐	☐	☐	☐
2.)	☐	☐	☐	☐	☐
3.)	☐	☐	☐	☐	☐
4.)	☐	☐	☐	☐	☐

Please copy the multiple choice questions' solution in the attached table. For each correct answer marked, 2 points are awarded; for each incorrect answer marked, -1 point is awarded. There is no limit to the number of correct answers per question. A negative aggregate score will be interpreted as 0 points.

1.) Which of the following options can be used to prove the sequent below? (According to the sequent calculus' derivation rules, which sequent or pair of sequents can replace the deduction of the sequent below?)

$$r \supset s, \neg t \vee w \to p \equiv q$$

-1 $r \supset s, \neg t \vee w, p \to q$

-1 $s, \neg t \vee w \to p \equiv q, r$

-1 $r \supset s, w \to p \equiv q, t$

-1 $r \supset s, \neg t, w \to p \equiv q$

2 $r \supset s, \neg t \to p \equiv q$; $r \supset s, w \to p \equiv q$

2.) Which of the following options can be used to prove the sequent below? (According to the sequent calculus' derivation rules, which sequent or pair of sequents can replace the deduction of the sequent below?)

$$p \equiv q \to r \supset s, \neg t \vee w$$

-1 $p \equiv q, s \to r, \neg t \vee w$

2 $p \equiv q, r \to s, \neg t \vee w$

2 $p \equiv q \to r \supset s, \neg t, w$

-1 $p \to r \supset s, \neg t \vee w, q$; $q \to r \supset s, \neg t \vee w, p$

-1 $p \equiv q, s, r \to \neg t \vee w$; $p \equiv q \to r, s, \neg t \vee w$

3.) Which statements are true regarding the following formula?

$$\neg(q \equiv \neg p)$$

2 a disjunctive normal form for the formula above is: $q \wedge p \vee \neg q \wedge \neg p$

-1 a disjunctive normal form for the formula above is: $(q \vee \neg p) \wedge (\neg q \vee p)$

-1 a conjunctive normal form for the formula above is: $(q \wedge p) \vee (\neg q \wedge \neg p)$

2 a conjunctive normal form for the formula above is: $(q \vee \neg p) \wedge (\neg q \vee p)$

-1 a normal form for the formula above is: $(q \supset p) \wedge (p \supset q)$

4.) Which statements are true regarding the following formula?

$$p \supset q \wedge p$$

2 a disjunctive normal form for the formula above is: $\neg p \vee q$

-1 a disjunctive normal form for the formula above is: $q \wedge \neg p$

-1 a conjunctive normal form for the formula above is: $q \wedge \neg p$

-1 a conjunctive normal form for the formula above is: $\neg p \wedge q$

-1 a normal form for the formula above is: $\neg q \supset \neg p$