Some additional question for the exam
Additional exam questions (example)

2022. September 29. (Thursday) 10:00
INBPA0101G-*

Result:

092910 000034

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
1.)	☐	☐	☐	☐
2.)	(essay)			
3.)	(essay)			
4.)	(essay)			

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.) How can we formalize the following statement by using a zero-order language with $Con = \{p, q, r\}$?

The sky is blue if and only if where there are no clouds and it is daytime.

$p \leftrightharpoons$ *The sky is blue.* $q \leftrightharpoons$ *There are clouds on the sky.* $r \leftrightharpoons$ *It is daytime.*

(a) $(\neg q \wedge r) \supset p$

(b) $p \supset (\neg q \wedge r)$

(c) $p \equiv \neg q \wedge r$

(d) $(\neg q \wedge r) \equiv p$

2.) What is the conjunctive normal form of $(((p \supset q) \supset r) \supset w)$?

3.) Construct the prenex form of

$$(\forall x P(x) \supset \exists x\,(Q(x, y) \supset \neg \forall x\,(Q(x, z) \vee P(z)))).$$

4.) Prove the following with sequent calculus.

$$(p \supset q) \wedge (p \supset \neg q) \vDash \neg p$$