Questions can be answered in Dutch or English.

1. Explain the following terms:

a) symbol table

b) stack machine

c) "functions as first-class citizens"

2. a) What is the dot motion rule for a lexical item of the form

$$[T \to \alpha \cdot (R) * \ \beta]$$

b) Explain this rule.

3. Describe briefly the fundamental difference between LL parsing and LR parsing.

4. a) What is the FIRST set of a non-terminal?

b) What is the FIRST set of a terminal?

c) Give an example of the use of FIRST sets.

5. Consider the attribute grammar

$$S \to A(i, s) \qquad [i := s \ ]$$

$$A(i_1, s_1) \to A(i_2, s_2) \ a \ [i_2 := i_1 \ ; \ s_1 := s_2 \ ]$$

$$A(i_1, s_1) \to B(i_2, s_2) \qquad [i_2 := i_1 \ ; \ s_1 := s_2 \ ]$$

$$B(i, s) \to b \qquad [s := i \ ]$$

in which the i s are inherited attributes and the s s are synthesized attributes. The attribute evaluation rules are given between square brackets.
Show by constructing the IS/SI graph of A that the attribute grammar is circular (contains a cycle).

Z.O.Z.

6. a) Describe briefly the basic idea in code generation by bottom-up tree rewriting.

b) Name one optimization that can be applied in such a system.

7. a) What naive code can be generated for the for-statement.

FOR i IN <lb>...<ub> DO <statseq> OD ?

b) What problem does this code have?

8. What happens when a closure representing a curried function with too few arguments is reduced?

9. Linda is based on an associative memory model- Tuple Space.
How can a Linda implementation avoid searching the entire Tuple Space for <u>in</u> and <u>read</u> operations?

10. What is the difference between the portability and the retargetability of a compiler?

Normering:

	1a: 3	2a: 5	3: 7	4a: 3	5: 15
	b: 3	b: 7		b: 1	
	c: 4			c: 5	
	10	12	7	9	15

6a: 8	7a: 6	8: 6	9: 8	10: 3
b: 3	b: 3			
11	9	6	8	3