<u>Dashboard</u> / <u>My courses</u> / <u>MA-224-G 25H</u> / <u>Tests</u> / <u>Test 1 (topics 1-3: Introduction, Concepts, Induction, Recursion, Grammars)</u>

| Status | Finished |
|-----------|---|
| Started | Thursday, 11 September 2025, 12:44 PM |
| Completed | Thursday, 11 September 2025, 1:13 PM |
| Duration | 29 mins 23 secs |
| Marks | 3.00/3.00 |
| Grade | 3.00 out of 3.00 (100 %) |
| | |

Information

Information

This page contains all the problems for this test. The very last problem asks you to contact the person in charge of the exam and tell him or her the 4-digit key given in the problem text. In return you will be given a 5-digit signing code which you must give as the answer to the problem.

This problem does not count towards the final score, but tests missing this code will not count towards the final grade.

The following rules apply:

- Total time allowed: 30 minutes. The test will automatically close if time runs out.
- UiA's usual rules in regards to cheating on exams apply.

Question **1**Correct
Mark 1.00 out of 1.00

We use the notation $\{x\cdot n|n\in\mathbb{N}\}$ for all natural multiples of x.

Compute the following sets.

$$\{4\cdot n|n\in\mathbb{N}\}\cup\{12\cdot n|n\in\mathbb{N}\}$$
 = $\{\ ig|4$

Your last answer was interpreted as follows:

4

$$\{28 \cdot n | n \in \mathbb{N}\} \cup \{4 \cdot n | n \in \mathbb{N}\} = \{ \mid 4 \mid \cdot n | n \in \mathbb{N}\}$$

Your last answer was interpreted as follows:

4

$$\{2\cdot n|n\in\mathbb{N}\}\cap\{6\cdot n|n\in\mathbb{N}\}$$
 = $\{egin{array}{c|c}6& & & & \\ \hline &n|n\in\mathbb{N}\}\end{array}$

Your last answer was interpreted as follows:

6

$$\left\{14\cdot n|n\in\mathbb{N}\right\}\cap\left\{91\cdot n|n\in\mathbb{N}\right\}=\left\{\begin{array}{c|c}182&&\\ &\\ &\\ &\end{array}\right. \left.n|n\in\mathbb{N}\right\}$$

Your last answer was interpreted as follows:

182

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|-------|---------|--------------------|-----------|------------|------------|----|
| | | | | | | |

Question **2**Correct

Mark 1.00 out of 1.00

Compute the prime factorizations of the following natural numbers.

Write the answer in the following form ($p_1^e_1 * p_2^e_1 * ... p_n^e_n$), which is shown as:

$$p_1^{e_1}\cdot p_2^{e_2}\cdot\dots p_n^{e_n}$$

where p_i is a prime and e_i is a natural number. All the primes p_i must be distinct.

| number | prime factors | | | | |
|--------|---------------|---|--|--|--|
| | 5^2* | 3^3 | | | |
| 675 | | Your last answer was interpreted as follows: $5^2 \cdot 3^3$ | | | |
| | 11^1 | * 5^1 * 3^1 * 2^3 | | | |
| 1320 | | Your last answer was interpreted as follows: $11^1 \cdot 5^1 \cdot 3^1 \cdot 2^3$ | | | |
| | 43^1 | * 3^2 * 2^1 | | | |
| 774 | | Your last answer was interpreted as follows: $43^1 \cdot 3^2 \cdot 2^1$ | | | |

| Question | 3 |
|----------|---|
| Correct | |

Mark 1.00 out of 1.00

Consider the following EBNF grammar.

 $H \rightarrow T \mid z H z \mid \epsilon$

 $\mathsf{D} \to \mathsf{N} \mid \mathsf{D} \; \mathsf{m} \; \mathsf{D}$

 $A \rightarrow u \mid v \ A \ v \mid \epsilon$

 $N \rightarrow u \mid i u [i]$

 $\mathsf{T} \to \mathsf{u} \mid \mathsf{u} \; \mathsf{t} \; \mathsf{u}$

Check the ambiguity of the grammar.

The grammar is ambiguous with the start symbol H:

The grammar is ambiguous with the start symbol D: True \$

The grammar is ambiguous with the start symbol A: False \$

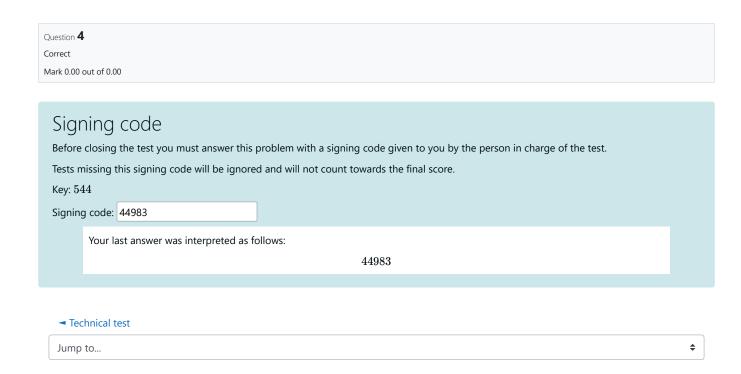
The grammar is ambiguous with the start symbol N: False \$

The grammar is ambiguous with the start symbol T: False

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\$



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