

⚠ This quiz has been regraded; your new score reflects 2 questions that were affected.

2020.05.27. Exam Quiz

Due May 27 at 1pm **Points** 20 **Questions** 10
Available until May 27 at 1pm **Time Limit** 60 Minutes

Instructions

You have 60 minutes to answer the questions.

The correct answers will be available between 12:45 and 3:45.

Each question is worth 2 points.

Grading:

0-7 points: 1

8-12 points: 2

13-15 points: 3

16-17 points: 4

18-20 points: 5

This quiz was locked May 27 at 1pm.

Attempt History

	Attempt	Time	Score	Regraded
LATEST	Attempt 1	59 minutes	6 out of 20	8 out of 20

Score for this quiz: **8** out of 20

Submitted May 27 at 12pm

This attempt took 59 minutes.

Question 1

0 / 2 pts

Let V be an arbitrary alphabet and $L \subseteq V^*$ an arbitrary language. Then

1. $\{uuu : u \in L\} \subseteq L^3$.

2. $L \cap L^{-1} = \emptyset$.

Which one is correct?

☒ Only the second

You Answered

Correct Answer

☐ Only the first

☐ Both☐ Neither**Question 2****0 / 2 pts**

Let V be an arbitrary alphabet and $L \subseteq V^*$ an arbitrary language. Then

1. L^0 can not be \emptyset (the empty language).

2. L^* can not be \emptyset (the empty language).

Which one is correct?

Correct Answer☐ Both**You Answered**☒ Neither☐ Only the second☐ Only the first**Question 3****0 / 2 pts**

1. Every language described by a regular expression can be generated by a left-linear grammar.

2. Every language generated by a left-linear grammar can be described by a regular expression.

Which one is correct?

You Answered☒ Only the first**Correct Answer**☐ Both☐ Only the second☐ Neither

Question 4

0 / 2 pts

1. Regular expressions $(ab)^*$ and a^*b^* describe the same language.
2. Regular expressions $(ab)^*$ and $\lambda|ab(ab)^*$ describe the same language.
- Which one is correct?

Correct Answer

☐ Only the second

☐ Only the first

You Answered

☒ Neither

☐ Both

Question 5

2 / 2 pts

Let $G = (\{S\}, \{a, b\}, S, R)$ be a regular grammar, where $R = \{S \rightarrow aaS|ba|a\}$.

Then which of the following grammars is an equivalent one with G in 3NF (third normal form):

G1: $R = \{S \rightarrow aA|bB|aD, A \rightarrow aS, B \rightarrow aD, D \rightarrow \lambda\}$

G2: $R = \{S \rightarrow aA|bB|B, A \rightarrow aS, B \rightarrow aC, C \rightarrow \lambda\}$

G3: $R = \{S \rightarrow aA|bB|a, A \rightarrow aS, B \rightarrow a\}$

G4: $R = \{S \rightarrow aS|bA|\lambda, A \rightarrow aB, B \rightarrow aS\}$

Every capital letter is a nonterminal symbol.

☐ G4

☐ G2

☐ G3

Correct!

☒ G1

Question 6

2 / 2 pts

Let L be an arbitrary language and A an arbitrary deterministic finite automaton, let F be its set of accepting states.

1. If $\forall u \in L$ at the end of the computation for u , A is in some state from F , then $L(A)=L$.
2. If $L(A)=L$, then $\forall u \in L$ at the end of the computation for u , A is in some state from F .

Which one is correct?

Correct!

☒ Only the second

☐ Neither

☐ Only the first

☐ Both

7. kérdés

Original Score: 0 / 2 pts Regraded Score: 2 / 2 pts

⚠ This question has been regraded.

Let $G1=(\{A\}, \{a, b\}, A, \{A \rightarrow abA|b\})$ and $G2=(\{B\}, \{a, b\}, B, \{B \rightarrow baB|b\})$.

Which one of the following grammars generates the language $L(G1)L(G2)$?

$G3=(\{S, A, B\}, \{a, b\}, S, \{S \rightarrow AB, A \rightarrow abA|b, B \rightarrow baB|b\})$

$G4=(\{A, B\}, \{a, b\}, A, \{A \rightarrow abA|bB, B \rightarrow baB|b\})$

$G5=(\{S, A, B\}, \{a, b\}, S, \{S \rightarrow A|B, A \rightarrow abA|b, B \rightarrow baB|b\})$

$G6=(\{A, B\}, \{a, b\}, A, \{A \rightarrow abB|bA, B \rightarrow baA|bB\})$

☐ G4

☒ G3

Correct!

☐ G5

☐ G6
8. kérdés**0 / 2 pts**

Let $G = (N, T, S, R)$ be an arbitrary context-free grammar. Then

1. G has at least one reachable nonterminal symbol.
2. G has at least one active nonterminal symbol.

Which one is correct?

☐ Neither

☒ Only the first

☐ Only the second

☐ Both
Correct!**Question 9****2 / 2 pts**

Let $G = (\{S, A, B, C\}, \{a, b\}, S, R)$ be a context-free grammar where
 $R = \{S \rightarrow ASa|bSB, A \rightarrow BB|SA, B \rightarrow C|SS, C \rightarrow ab|baS\}$

Then nonterminal symbol A is:

☐ Inactive and unreachable

☒ Active and reachable

☐ Inactive but reachable

☐ Active but unreachable
Correct!

Question 10**0 / 2 pts**

Let $A = (Q, \Sigma, \Gamma, \delta, q_0, \gamma_0, F)$ be an arbitrary pushdown automaton. Then

1. one can construct a deterministic finite automaton A' , for which $L(A') = L(A)$ holds.
2. one can construct a deterministic pushdown automaton A' , for which $L(A') = L(A)$ holds.

Which one is correct?

☐ Only the first

☐ Neither

☒ Only the second

☐ Both

Correct Answer

You Answered

Quiz Score: **8** out of 20