PSM-2

Due Feb 23 at 12:10am **Points** 20 **Questions** 7 **Available** after Feb 23 at 12am **Time Limit** 25 Minutes

Instructions

This quiz is for 25 minutes duration.

NOTE: Some questions use the same grammar. The grammar is replicated in ALL such questions.

This will be a SILENT exam. NO Queries will be answered during the exam. If you have any doubt/query, make suitable assumptions and solve the question. You can email all your assumptions to the instructor IMMEDIATELY AFTER the exam is over; i.e., around 10 AM on Feb 23.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	25 minutes	11.25 out of 20

Score for this quiz: **11.25** out of 20
Submitted Feb 23 at 8:56am
This attempt took 25 minutes.

Question 1

0 / 3 pts

Consider the ambiguous grammar with Non-terminals {S, A} and terminals as { +, x } :

```
S -> + S
S -> S + A
S -> A
A -> x
```

Assuming unary + has **lower** precedence than the binary +, rewrite the grammar to make it unambiguous.

Your Answer:
S -> +A |

Question 2

0 / 3 pts

Consider the ambiguous grammar with Non-terminals {S, A} and terminals as { +, x } :

```
S -> + S
S -> S + A
S -> A
A -> x
```

Assuming unary + has **higher** precedence than the binary +, rewrite the grammar to make it unambiguous.

Your Answer:

Question 3

0 / 2 pts

Let G denote a grammar and L(G) denote the language accepted by G.

Consider the following statements:

S1: If G is ambiguous, then NO LR(k) parser exists that accepts L(G) for any k >= 1.

S2: If L(G) is regular (accepted by a DFA), then there exists a LR(k) parser (for some k >=1) that accepts G.

Correct answer
- ○ Both S1 and S2 are FALSE.
- ○ S1 is FALSE but S2 is TRUE.

You Answered
- ◉ Both S1 and S2 are TRUE.
- ○ S1 is TRUE but S2 is FALSE.

Question 4

3 / 3 pts

Consider the grammar with the terminals given in lowercase, and the non-terminals in uppercase. Empty RHS means empty string (ε in class slides):

```
A -> B C D
B -> b B
C -> C g
C -> g
C -> C h
C -> i
C ->
D -> A B
D ->
```

Which rules cause the symbol $ to be in Follow(C)? If combinations of multiple rules cause it to be in the follow set, select all such rules.
If the symbol $ is NOT in Follow(C), choose NONE.

- ☐ C -> C g
- ☐ C -> C h

Correct!
- ☑ D ->

Correct!
- ☑ A -> B C D
- ☐ NONE
- ☐ D -> A B

Question 5

3 / 3 pts

Consider the grammar with the terminals given in lowercase, and the non-terminals in uppercase. Empty RHS means empty string (ε in class slides):

```
A -> B C D
B -> b B
C -> C g
C -> g
C -> C h
C -> i
C ->
D -> A B
D ->
```

Which rule(s) cause i to be put in Follow(C). If a combination of multiple rules cause it to be in the follow set, select all such rules.
If the symbol i is NOT in Follow(C), choose NONE.

- ☐ C -> C g
- ☐ B -> b B
- ☐ A -> B C D
- ☐ D ->

Correct!
- ☑ NONE
- ☐ C -> C h
- ☐ C -> i

Question 6

3 / 3 pts

Consider the grammar with the terminals given in lowercase, and the non-terminals in uppercase. Empty RHS means empty string (ε in class slides):

```
A -> B C D
B -> b B
C -> C g
C -> g
C -> C h
C -> i
C ->
D -> A B
D ->
```

Select all the symbols that are in FIRST(C). Choose NONE if none of the given symbols are in FIRST(C).

- ☐ NONE

Correct!
- ☑ g

Correct!
- ☑ h

Correct!
- ☑ empty string (epsilon)
- ☐ $

Correct!
- ☑ i

Question 7

2.25 / 3 pts

Consider the following grammar

```
E -> E E +
E -> E E *
E -> num
```

The grammar is (choose all correct options)

Correct!
- ☑ Unambiguous
- ☐ Ambiguous

Correct!
- ☑ LALR

Correct!
- ☑ SLR

Correct answer
- ☐ CLR