

# 35 Lecture - CS402

## Important Mcqs

1. **What is null production in a context-free grammar?**

- A) A production rule that generates a null string
- B) A production rule that generates a non-terminal symbol
- C) A production rule that generates a terminal symbol
- D) A production rule that generates a regular expression

**Answer: A**

**What is the purpose of using null productions in a context-free grammar?**

- A) To simplify the grammar by eliminating the need for additional productions
- B) To make the grammar more complex
- C) To increase the number of derivations for a given string
- D) To make the grammar more ambiguous

**Answer: A**

**Which of the following is an example of a null production?**

- A)  $A \rightarrow aB$
- B)  $B \rightarrow ?$
- C)  $S \rightarrow AB$
- D)  $S \rightarrow aSb$

**Answer: B**

**What is the effect of a null production on the parse tree of a string?**

- A) It adds a new subtree to the parse tree
- B) It removes a subtree from the parse tree
- C) It does not affect the parse tree
- D) It can lead to multiple parse trees for a given string

**Answer: B**

**Can a context-free grammar have multiple null productions?**

- A) Yes
- B) No

**Answer: A**

**What is the relationship between null productions and the language generated by a context-free grammar?**

- A) Null productions do not affect the language generated by a grammar
- B) Null productions can change the language generated by a grammar
- C) Null productions can only be used in regular languages
- D) Null productions are used to generate infinite languages

**Answer: B**

**Which of the following is an example of a context-free grammar with null productions?**

$S \rightarrow AB \mid ?$

A)  $a$

B)  $bB \mid \epsilon$

A)  $\{ a^n b^n c^m \mid n, m \geq 0, 1 \leq n \leq m \}$

B)  $\{ a^n b^n c^n \mid n \geq 0 \}$

C)  $\{ a^n b^m c^n \mid n, m \geq 0 \}$

D)  $\{ w \in \{ a, b \}^* \mid n_a(w) = n_b(w) \}$

**Answer: C**

**What is the difference between a null production and an empty string in a context-free grammar?**

A) There is no difference between null production and empty string

B) Null production is a rule used in the derivation of a string, while an empty string is a string itself

C) An empty string is a non-terminal symbol, while null production is a terminal symbol

D) An empty string can only be used in regular grammars

**Answer: B**

**How can ambiguity be introduced in a context-free grammar by using null productions?**

A) By adding multiple null productions for the same non-terminal symbol

B) By adding null productions for all non-terminal symbols in the grammar

C) By using null productions in the production rules of a regular language

D) By removing null productions from the grammar

**Answer: A**

**Which of the following statements is true about the Chomsky Normal Form (CNF) of a context-free grammar?**

A) The CNF does not allow null productions

B) The CNF allows only null productions

C) The CNF allows both null and unit productions

D) The CNF only allows unit productions

**Answer: A**