

# 30 Lecture - CS402

## Important Mcqs

1. Which of the following is true about context-free grammar?

- A) It can describe only regular languages
- B) It can describe only context-sensitive languages
- C) It can describe both regular and context-sensitive languages
- D) It can describe only context-free languages

Answer: D

What is a production rule in a context-free grammar?

- A) A rule that specifies how to generate a string
- B) A rule that specifies the terminal symbols of a language
- C) A rule that specifies the non-terminal symbols of a language
- D) A rule that specifies the start symbol of a language

Answer: A

Which of the following is true about a context-free grammar?

- A) It can generate infinite strings
- B) It can generate only finite strings
- C) It can generate both finite and infinite strings
- D) It cannot generate any strings

Answer: A

Which of the following is a non-terminal symbol in a context-free grammar?

- A) a
- B) b
- C) A
- D) B

Answer: C and D

What is the purpose of the start symbol in a context-free grammar?

- A) It specifies the first production rule to be applied
- B) It specifies the last production rule to be applied
- C) It specifies the non-terminal symbols of a language
- D) It specifies the beginning of a string generated by the grammar

Answer: D

Which of the following is true about leftmost and rightmost derivations in a context-free grammar?

- A) They always produce the same parse tree
- B) They always produce different parse trees
- C) They can produce the same or different parse trees
- D) They cannot produce parse trees

Answer: A

Which of the following is true about a parse tree generated by a context-free grammar?

- A) It shows the order in which the production rules were applied

- B) It shows the terminal symbols of the language
- C) It shows the non-terminal symbols of the language
- D) It shows the start symbol of the language

Answer: A, B, and C

**What is the Chomsky normal form of a context-free grammar?**

- A) A form in which every production rule has only one non-terminal symbol on the right-hand side
- B) A form in which every production rule has at most two non-terminal symbols on the right-hand side
- C) A form in which every production rule has only one terminal symbol on the right-hand side
- D) A form in which every production rule has at most two terminal symbols on the right-hand side

Answer: B

**Which of the following is true about the pumping lemma for context-free languages?**

- A) It is used to prove that a language is context-free
- B) It is used to prove that a language is not context-free
- C) It is used to prove that a language is regular
- D) It is used to prove that a language is not regular

Answer: B

**Which of the following is an example of a context-free language?**

- A)  $\{a^n b^n : n \geq 0\}$
- B)  $\{a^n b^n : n \geq 1\}$
- C)  $\{a^n b^m c^k : n, m, k \geq 0\}$
- D)  $\{a^n b^m : n, m \geq 0\}$

Answer: C