



NR23: Principles of programming languages: 23CC508(Professional Elective- II)

UNIT – I: preliminary concepts

MULTIPLE CHOICE QUESTIONS(MCQs)

1. Which of the following is **not** a programming language evaluation criterion?
- A) Readability
 - B) Reliability
 - C) Portability
 - D) Scalability

Answer: D) Scalability

2. The ease with which programs can be understood is known as:
- A) Writability
 - B) Readability
 - C) Reliability
 - D) Cost

Answer: B) Readability

3. Which factor mainly influences the design of programming languages?
- A) Hardware architecture
 - B) Software methodology
 - C) User requirements
 - D) All of the above

Answer: D) All of the above

4. Which language is primarily categorized as a logic programming language?
- A) C++
 - B) Java
 - C) Prolog
 - D) Python

Answer: C) Prolog

5. Which implementation method translates the entire source program before execution?
- A) Interpretation
 - B) Compilation
 - C) Hybrid implementation
 - D) Virtual execution

Answer: B) Compilation

6. A program that converts source code into machine code is called:

- A) Interpreter
- B) Linker
- C) Compiler
- D) Loader

Answer: C) Compiler

7. The set of rules that determines the structure of a program is called:
- A) Semantics
 - B) Syntax
 - C) Pragmatics
 - D) Lexicon

Answer: B) Syntax

8. The meaning associated with program statements is known as:
- A) Syntax
 - B) Semantics
 - C) Grammar
 - D) Parsing

Answer: B) Semantics

9. Which notation is commonly used to describe programming language syntax?
- A) UML
 - B) ER Diagram
 - C) BNF
 - D) Flowchart

Answer: C) BNF

10. BNF stands for:
- A) Basic Notation Format
 - B) Backus-Naur Form
 - C) Binary Normal Form
 - D) Boolean Notation Framework

Answer: B) Backus-Naur Form

11. A context-free grammar consists of:
- A) Tokens only
 - B) Variables and constants only
 - C) Terminals, non-terminals, productions, and a start symbol
 - D) Operators and operands only

Answer: C) Terminals, non-terminals, productions, and a start symbol

12. The process of breaking a program into tokens is called:
- A) Parsing
 - B) Compilation
 - C) Lexical analysis
 - D) Optimization

Answer: C) Lexical analysis

13. The output of a lexical analyzer is:

- A) Parse tree
- B) Tokens
- C) Intermediate code
- D) Machine code

Answer: B) Tokens

14. Which phase checks whether the token sequence follows grammar rules?

- A) Lexical analysis
- B) Semantic analysis
- C) Syntax analysis
- D) Code generation

Answer: C) Syntax analysis

15. A parse tree is also known as:

- A) Syntax tree
- B) Semantic graph
- C) Dependency graph
- D) State diagram

Answer: A) Syntax tree

16. Which semantic description method specifies program behavior using machine states?

- A) Axiomatic semantics
- B) Denotational semantics
- C) Operational semantics
- D) Dynamic semantics

Answer: C) Operational semantics

17. Axiomatic semantics is primarily used for:

- A) Code optimization
- B) Program verification
- C) Token generation
- D) Parsing

Answer: B) Program verification

18. Denotational semantics maps program constructs to:

- A) Machine instructions
- B) Mathematical objects
- C) Tokens
- D) Parse trees

Answer: B) Mathematical objects

19. Which of the following improves the writability of a programming language?

- A) Simplicity and orthogonality
- B) Complex syntax
- C) Excessive keywords
- D) Ambiguous grammar

Answer: A) Simplicity and orthogonality

20. Java uses which implementation approach?
- A) Pure compilation
 - B) Pure interpretation
 - C) Hybrid implementation
 - D) Manual execution

Answer: C) Hybrid implementation

Part B: Fill in the Blanks (20)

1. The ease of understanding programs is called _____.

Answer: Readability

2. The ability to create programs easily is known as _____.

Answer: Writability

3. The process of translating source code into machine code is called _____.

Answer: Compilation

4. A program that executes source code line by line is an _____.

Answer: Interpreter

5. The rules governing the structure of a language are called _____.

Answer: Syntax

6. The meaning of program statements is known as _____.

Answer: Semantics

7. BNF stands for _____.

Answer: Backus-Naur Form

8. The first phase of language processing is _____ **analysis**.

Answer: Lexical

9. The output of lexical analysis is a sequence of _____.

Answer: Tokens

10. A grammar consisting of terminals, non-terminals, productions, and a start symbol is called a _____ **grammar**.

Answer: Context-free

11. The graphical representation of the syntactic structure of a program is called a _____ **tree**.

Answer: Parse

12. The symbol from which grammar derivation begins is called the _____ **symbol**.

Answer: Start

13. Operational semantics describes program execution using _____ **changes**.

Answer: State

14. Denotational semantics uses _____ **models** to define meaning.

Answer: Mathematical

15. Axiomatic semantics is mainly used for program _____.

Answer: Verification

16. The process of checking grammar rules is called _____ **analysis**.

Answer: Syntax

17. The symbols that appear in the final strings of a grammar are called _____.

Answer: Terminals

18. The variables used in grammar definitions are called _____.

Answer: Non-terminals

19. Java bytecode is executed by the _____ **Machine (JVM)**.

Answer: Java Virtual

20. Reliability in programming languages refers to the ability to perform according to _____.

Answer: Specifications