K26U 0102

Reg. No. : .....

Name : .....

Sixth Semester B.C.A. Degree (C.B.C.S.S. – O.B.E. – Regular/ Supplementary/Improvement) Examination, April 2026
(2020 to 2023 Admissions)
Core Course
6B18BCA : INTRODUCTION TO COMPILER

Time : 3 Hours Max. Marks : 40

PART – A
(Short Answer)

Answer **all** the questions. **(6×1=6)**

1. What is the primary output of the Lexical Analyzer ?
2. Which mathematical model is typically used for the recognition of tokens in lexical analysis ?
3. In the context of context-free grammars, what does the term derivation refer to ?
4. What is the main goal of the intermediate code generation phase ?
5. Name one common form of intermediate code.
6. What is a DAG ?

PART – B
(Short Essay)

Answer **any 6** questions. **(6×2=12)**

7. Differentiate between a single-pass compiler and a multi-pass compiler.
8. Briefly explain the roles of analysis and synthesis in the compilation process.
9. List two key reasons why the compilation process is typically separated into a lexical analysis phase and a syntax analysis phase.
10. Briefly explain the need for input buffering in the lexical analyzer.
11. Differentiate between quadruples and triples based on their structure.
12. What is the purpose of the static single assignment ?

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13. Differentiate briefly between static allocation and dynamic allocation in run-time environments.

14. What is an activation record ?

PART – C
(Essay)

Answer **any 4** questions. **(4×3=12)**

15. List and briefly describe the three major parts of compilation.

16. Explain the role of the lexical analyzer in its communication with the syntax analyzer. What information is passed between them ?

17. Describe the technique of input buffering used by the lexical analyzer to efficiently read the source program, particularly mentioning the use of sentinels.

18. What is meant by error handling and recovery in syntax analysis ? Briefly list three common error recovery strategies.

19. Explain the concept of a derivation in context-free grammar. Provide a simple CFG and show the steps of a left-most derivation for a valid sentence.

20. Explain the concept of a calling sequence and list the steps typically performed by the caller and the callee.

PART – D
(Long Essay)

Answer **any 2** questions. **(2×5=10)**

21. Explain the entire process of compilation using the main phases of a compiler, detailing the input and output of the initial and final stages.

22. Elaborate on the function of top-down parsing. Discuss two major challenges associated with simple top-down parsers and how they are typically resolved.

23. Elaborate on the role of the Static Single Assignment form in modern compilers. Explain its key property and how φ-functions are used to handle control flow merging.

24. Discuss the role of data flow analysis in code optimization. Explain the concept of a data flow analysis schema and how it is applied to basic blocks to gather information required for various optimizations.
