K24U 0185

Reg. No. : .....

Name : .....

Sixth Semester B.C.A. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2024
(2019 to 2021 Admissions)
Core Course
6B18BCA : INTRODUCTION TO COMPILER

Time : 3 Hours Max. Marks : 40

SECTION – A
(Very Short Answers)

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

1. Define lexical analysis in the context of compilers.
2. Explain the purpose of a symbol table in compiler design.
3. Define three-address code and its significance in intermediate code generation.
4. Define the term code optimization.
5. Differentiate between assembler and interpreter.
6. What are global variables ? Give an example.

SECTION – B
(Short Answers)

Write short notes on **any six** of the following questions. **(6×2=12)**

7. Compare and contrast top-down and bottom-up parsing techniques in the context of compiler construction.
8. Explain the difficulties associated with error handling in compilers.
9. What is the significance of a preprocessor in the compilation process and its functionalities.

P.T.O.

10. Explain the role of a compiler in the software development process.

11. Discuss the challenges associated with register allocation in compiler design.

12. Describe three-address code and its advantages as an intermediate code representation. Provide examples to illustrate its structure.

13. Explain the principles of data flow analysis.

14. Explain the term left recursion in the context of grammar.

SECTION – C
(Essay)

Answer **any four** of the following questions. **(4×3=12)**

15. Differentiate between triples and indirect triples.

16. Classify the various errors encountered in different phases of compilers.

17. Draw the transition diagram for relational operators and unsigned numbers.

18. Define storage optimization in the context of compiler design.

19. Elaborate on peephole optimisation.

20. Discuss the role of precedence and associativity in resolving syntactic ambiguity.

SECTION – D
(Long Essay)

Answer **any two** of the following questions. **(2×5=10)**

21. Explain bottom-up parsing technique.

22. Explain the phases of a compiler. Illustrate each stage with a suitable example.

23. Describe the role of a buffer in lexical analysis and how it facilitates the tokenization process.

24. Describe the role of type equivalence in parameter passing mechanisms.

K23U 0444

Reg. No. : .....

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VI Semester B.C.A. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2023
(2019 and 2020 Admissions)
Core Course
6B18BCA : INTRODUCTION TO COMPILER

Time : 3 Hours Max. Marks : 40

SECTION – A
(Very Short Answer)

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

1. What are the outputs of front-end processing ?
2. Which are the three types of parsers ?
3. What is panic mode recovery ?
4. Give an account on Finite Automata.
5. What is garbage collection ?
6. State the problem of left recursion and provide a solution.

SECTION – B
(Short Answers)

Write short notes on **any six** of the following questions. **(6×2=12)**

7. Explain the concept of buffer pairs in recognising tokens.
8. What are the rules to calculate the first of a set ?
9. Differentiate between SLR and Canonical LR parser.
10. Explain the concepts of address and instruction forms as the building block of three address codes.

P.T.O.

11. Briefly narrate on Lexical Analysis.

12. What is the reason for separation of compiler to lexical analysis and syntax analysis ?

13. What is type checking ?

14. Explain the symbol table as a data structure.

SECTION – C
(Essay)

Answer **any four** of the following questions. **(4×3=12)**

15. Construct a DAG for a + b * (b – c) + (b – c) * d and explain it.

16. Explain one passcode generation with backpatching.

17. Write in your own words about ambiguous grammar with an example.

18. Compare static and dynamic storage allocation.

19. Analyse the relationship between Parsing and CFG.

20. Explain peephole optimisation.

SECTION – D
(Long Essay)

Write an essay on **any two** of the following questions. **(5×2=10)**

21. Explain various phases of compilers.

22. Explain top-down parsing. What is the problem of infinite looping in it ?

23. Describe activation trees and activation records.

24. Write an essay on the three primary tasks of a code generator with an illustration.

K22U 0344

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VI Semester B.C.A. Degree (CBCSS-OBE-Regular) Examination, April 2022
(2019 Admission)
Core Course
6B18BCA : INTRODUCTION TO COMPILER

Time : 3 Hours Max. Marks : 40

SECTION – A **(Very Short Answer)**

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

1. What is the major difference between single pass and multi-pass compiler ?
2. List out the different phases of compilation.
3. What is a token in lexical analysis ?
4. When is a grammar said to be ambiguous ?
5. What is a left-recursive grammar ? Specify the context and reason for its elimination.
6. Mention the different possible operations on languages.

SECTION – B **(Short Answer)**

Write short notes on **any six** of the following questions. **(6×2=12)**

7. Differentiate between a compiler and an interpreter.
8. Discuss briefly about Symbol Table.
9. Explain briefly the terms alphabet, string and language in grammars.
10. What is a parse tree ? Draw an example.
11. Elaborate on the different forms of type checking.
12. What is a calling sequence and return sequence in the context of procedure calls ?
13. What is a dead-code ? Mention a method used for its elimination.
14. What are the conditions to be satisfied for a block to be a basic block ?

P.T.O.

SECTION – C **(Essay)**

Answer **any four** of the following questions. **(4×3=12)**

15. Explain briefly about any three major components in a language processing system.

16. Which are the major two parts of compilation process, explain and mention the phases coming under each part ?

17. Explain the structure and use of a transition diagram with an example.

18. Define and detail on Context-free Grammar with an example.

19. In the context of intermediate code generation, discuss on Directed Acyclic Graphs (DAG) and its major difference with syntax trees.

20. Discuss briefly about data-flow schema "Reaching Definitions" ?

SECTION – D **(Long Essay)**

Write an essay on **any two** of the following questions. **(2×5=10)**

21. Explain in detail about regular expressions for specifying token patterns with a suitable example.

22. Elaborate on the various Error-Recovery strategies in a parser.

23. Discuss in detail about the different representations of three-address instructions.

24. Explain in detail the general structure of an activation record.
