Roll No. | | | | | | | | | | |

Total No. of Questions : 09

Total No. of Pages : 02

B.Tech (CSE) (Sem.–6)

COMPILER DESIGN

Subject Code : BTCS601-18

M.Code : 79249

Date of Examination : 18-01-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

   a) What is meant by ambiguous grammar?

   b) What are syntax errors, give two examples?

   c) What is an Interpreter?

   d) Give some compiler construction tools.

   e) Differentiate between compiler and interpreter.

   f) Remove left recursion S-→ Aa/b, A-→ Ac/Sd/e.

   g) What is Basic Block? Write its use.

   h) Define the two parts of compilation and its function.

   i) Define Ambiguous Grammar.

   j) What is DAG?

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SECTION-B

2. Explain Language Processing System with neat diagram.

3. What are issues in Lexical Analysis?

4. Explain various Errors encountered in different phases of compiler.

5. Construct Stack Implementation of Shift-Reduce Parsing for the grammar below:
   E-→ E+E E-→ E*E E-→ (E) E-→ id
   For the given input string id1 + id2 * id3.

6. Construct LL(1) grammar for tile sentence S-→ iEts|iEtSeS |a E-→ b

SECTION-C

7. Explain the following w.r.t code generation phase:

   a) Input to code generator

   b) Target Program

   c) Memory Management

   d) Instruction Selection

   e) Register Allocation

   f) Evaluation Order

8. Discuss different Storage Allocation Strategies.

9. Explain Principal Sources of Optimization with example.

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Total No. of Pages : 02

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B.Tech. (CSE) (Sem.–6)

COMPILER DESIGN

Subject Code : BTCS-601-18

M.Code : 79249

Date of Examination : 06-05-2024

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Answer briefly :**

   a) NFA, DFA and Transition Table

   b) Language Translators

   c) Type checking

   d) Parse tree

   e) Jumping code

   f) Syntactic Error *vs* Semantic Error

   g) Syntax tree

   h) DAG

   i) Backpatching

   j) Left recursion.

SECTION-B

2. How does Input Buffering help in recognizing tokens? Explain in detail.

3. Consider the grammar

   $E \rightarrow 2E2$

   $E \rightarrow 3E3$

   $E \rightarrow 4$

   Perform Shift Reduce parsing for input string "32423".

4. Explain in detail the design of a simple code generator.

5. Explain the implementation of quadruple, triple and indirect triple in detail.

6. Write a note on Yacc.

SECTION-C

7. Write a note on global data flow analysis used in basic blocks

8. Explain in detail various types of optimizations with a suitable example.

9. How SLR(1) parsing is performed on the given below grammar, create its parsing table and explain in detail.

   $E \rightarrow T+E / T$

   $T \rightarrow id$

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B.Tech. (CSE) (Sem.–6)

COMPILER DESIGN

Subject Code : BTCS601-18

M.Code : 79249

Date of Examination : 18-12-2023

Time : 3 Hrs.

Max. Marks : 60

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SECTION-A

1 **Attempt the following:**

a) List the cousins of the compiler.

b) What is DAG?

c) Differentiate between parse tree and syntax tree

d) Comparison between call by value and call by reference.

e) Describe the term Environments and States.

f) Differentiate between token and lexeme.

g) What is a symbol table? Where is it used in the compiler?

h) What is shift-reduce conflict? Give one example.

i) What is the role of Lexical Analyzer?

j) What is back patching?

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SECTION-B

2 Discuss peephole optimization with an example.

3 Explain three address code quadruples and triples with an example.

4 Explain shift-reduce parsing with the help of an example?

5 Remove ambiguity from, given grammar

$$E \rightarrow E+E \mid E-E \mid E/E \mid E*E \mid (E) \mid -E \mid id$$

6 How syntax-directed scheme is implemented, discuss with an example?

SECTION-C

7. Explain the phases of the compiler in detail with an example?

8. Discuss the optimization of Loops with examples.

9. Test whether the given grammar is LL1 or not and construct a predictive parsing table for it:

$S \rightarrow iCtSS' \mid a$

$S \rightarrow eS \mid \epsilon$

$C \rightarrow b$

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B.Tech. (CSE) PIT(Sem.–6)

COMPILER DESIGN

Subject Code : BTCS-601-18

M.Code : 79249

Date of Examination : 02-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

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SECTION-A

Write briefly :

1. Lexeme
2. Error
3. Three address code
4. Impact of empty entry in parsing table.
5. Type checking
6. NFA
7. Regular expression
8. Syntax tree
9. Context free grammar
10. Phase of a compiler.

SECTION-B

11. Write a note on input buffering.
12. How shift reduce parsing is performed on given below grammar, explain in detail.

    $S \rightarrow S + S$

    $S \rightarrow S*S$

    $S \rightarrow id$

13. Differentiate between Parse tree and Syntax tree with the use of suitable example.
14. Explain the role of symbol table, symbol table management in compiler design.
15. Explain various issues of code generation in compiler design.

SECTION-C

16. Write a note on basic blocks and its optimization techniques.
17. Explain in detail the role of various phases of compiler with suitable example.
18. Explain in detail error handling mid recovery techniques available in compiler.

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B.Tech. (CSE) PIT(Sem.–6)

COMPILER DESIGN

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M.Code : 79249

Date of Examination : 02-07-22

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