

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(CSE) (Sem.-6)

COMPILER DESIGN

Subject Code : BTCS-601-18

M.Code : 79249

Date of Examination : 19-11-2025

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 are the different types of intermediate forms of code generation?
 - b) List the rules for constructing regular expressions.
 - c) **Do left factoring in the following Grammar :**
$$A \rightarrow aBcC \mid aBb \mid aB \mid a$$
$$B \rightarrow \epsilon$$
$$C \rightarrow \epsilon$$
 - d) List the criteria for selecting a code optimization technique.
 - e) What are the necessary conditions for a grammar to be accepted by a top-down parser?
 - f) How compiler is different from interpreter though both of them are interpreters?
 - g) State the problems in code generation.
 - h) What are the characteristics of peephole optimization?
 - i) Name minimum 4 compiler construction tools.
 - j) What is the role of lexical analyzer in compilation process? What are patterns, lexemes and tokens?

SECTION-B

2. **Write a short note on:**

- a) Input Buffering
- b) Linkers vs. Loaders

- 3. For the regular expression, $(a/b)^*abb$. Draw the NFA. Obtain DFA from NFA. Minimize DFA using Thompson's Construction method.
- 4. Explain the concept of types and declarations in the context of a programming language's semantics. Why is type checking important during compilation?
- 5. What are the key issues in code generation during the compilation process?
- 6. What are Syntax Directed Definitions (SDDs)? Explain with an example how SDDs are used to define the translation of arithmetic expressions?

SECTION-C

7. **Construct a LL(1) parsing table for the following Grammar :**

$S \rightarrow AB$

$A \rightarrow a \mid \epsilon$

$B \rightarrow b \mid \epsilon$

And give the parsing actions for the input string "ab\$".

- 8. Explain various code optimization techniques in details with examples for each.
- 9. Explain the process of compilation in detail. Illustrate the output of each phase of compilation for the input expression: $x = (y - z) + (a * b)$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.