



10IS662

Sixth Semester B.E. Degree Examination, July/August 2021
Compiler Design

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain with a neat diagram different phases of a compiler. (10 Marks)
b. Explain different software productive tools. (04 Marks)
c. Construct transition diagram for the following : (06 Marks)
i) Relop ii) Identifiers iii) Unsigned numbers. (06 Marks)
- 2 a. Explain any three error-recovery strategies in parser. (06 Marks)
b. Consider the following grammer
 $E \rightarrow I \mid E + E \mid E * E \mid (E)$
 $I \rightarrow a \mid b \mid I_a \mid I_b$
i) Check whether the Grammer is ambiguous or not for the given input string $w = a * b + a$ (08 Marks)
ii) If ambiguous construct an equivalent unambiguous grammer (06 Marks)
c. Give the algorithm for elimination of left recursion.
- 3 a. Give Algorithm for FIRST and FALLOW set construction give the same for the following grammer
 $E \rightarrow TE', E' \rightarrow TE' \mid \epsilon, T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \epsilon, F \rightarrow (E) \mid id$ (08 Marks)
b. What is ment by handle pruning? Explain how it helps in shift reduce parsing. (06 Marks)
c. Construct the predictive parsing table for the Grammer Given
 $S \rightarrow iEtSS' \mid a S' \rightarrow eS \mid \epsilon E \rightarrow b$ (06 Marks)
- 4 a. Construct LR(0) items for the Grammer
 $E \rightarrow E + T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E) \mid id$ (08 Marks)
b. Write a note on parser generator – Yacc. (04 Marks)
c. Give the algorithm for construction of canonical – LR parsing Table. (08 Marks)
- 5 a. Explain the concept of Syntax Directed Translation with example. (06 Marks)
b. Define inherited and synthesized attributes. Give SDD of a simple desk calculator. (08 Marks)
c. Write the annotated parse tree for $3 * 5 + 4n$. (06 Marks)
- 6 a. Describe the methods of generating intermediate code for the flow control statement. (10 Marks)
b. Explain DAG for expression? Give the DAG for $a + a * (b - c) + (b - c) * d$. (06 Marks)
c. Explain Quadruples and triples with example. (04 Marks)
- 7 a. Explain in detail different dynamic storage allocation strategies. (08 Marks)
b. Explain in detail the strategies for reducing fragmentation in heap memory. (06 Marks)
c. Explain design goals for Garbage collection. (06 Marks)
- 8 a. List and explain design issues of a code generator. (10 Marks)
b. What is basic block? How optimization is done basic block. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8=50, will be treated as malpractice.