

III-B. Tech II-Semester Supplementary Examinations (BR20), SEP- 2023
COMPILER DESIGN (Common to CSE & CSE (AI&DS))

Time: 3 hours

Max. Marks: 70

*Question Paper consists of FIVE units, each carrying 14 marks
Each unit has TWO questions; either of them should be answered
All parts of a question must be answered at one place*

1.a) Explain the structure of Compiler? And how the following statement will be translated into every phase. Position: = initial + rate * 60. (14M)

(OR)

1.c) Describe the Input buffering techniques in detail. (7M)

1.d) Describe the role of lexical analysis phase with suitable example. (7M)

2.a) Eliminate the left recursion from the following grammar. (4M)

$$A \rightarrow ABd / Aa / a$$

$$B \rightarrow Be / b$$

2.b) Construct predictive parsing table for the following grammar. (10M)

$$S \rightarrow (L) / a$$

$$L \rightarrow L, S / S$$

(OR)

2.c) Verify whether the given grammar is LL(1) or not. (7M)

$$S \rightarrow Aa|bAc|Bc|bBa$$

$$A \rightarrow d$$

$$B \rightarrow d.$$

2.d) Explain error-recovery in predictive parsing. (7M)

3.a) List out the differences between LL Parsers and LR Parsers. (4M)

3.b) Define SLR parser. Construct the following grammar for generate the SLR parsing table. (10M)

$$E \rightarrow E+T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (E) \mid id$$

(OR)

3.c) Consider the grammar (4M)

$$S \rightarrow (L) \mid a$$

$$L \rightarrow L, S \mid S$$

Perform Shift Reduce parsing for input string (a , (a , a)).

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3.d) Construct CLR parsing table for the following grammar

(10M)

$S \rightarrow CC$

$C \rightarrow cC$

$C \rightarrow d$

4.a) Write the quadruple, triple, indirect triple for the statement $a := b * -c + b * -c$ (7M)

4.b) Give the difference between syntax-directed definitions and translation schemes. (7M)

(OR)

4.c) Explain different ways to implement three address code statements with example. (7M)

4.d) Describe syntax directed translation schemes with appropriate examples. (7M)

5.a) Explain the detail the various storage allocation strategies? (7M)

5.b) What are basic blocks? Write the algorithm for partitioning into Blocks. (7M)

(OR)

5.c) Write briefly about various loop optimization techniques? (7M)

5.d) Discuss peephole optimization technique with an example. (7M)
