



CBCS SCHEME

18CS61

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18CS61

Sixth Semester B.E. Degree Examination, Dec.2025/Jan.2026 System Software and Compilers

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the Instruction formats and Addressing modes of SIC/XE M/C Architecture. (10 Marks)
- b. Write SIC/XE program to read 100 bytes record from Device 'F5' into BUFFER, use immediate register to register instruction. (10 Marks)

OR

- 2 a. With an Algorithm, explain PASS -1 of two pass Assembler. (10 Marks)
- b. Define Loader? Write an Algorithm for the Absolute loader? (10 Marks)

Module-2

- 3 a. Explain the different phases of compiler and translate the argument. "Init = val + rate * 30". Clearly indicate the output of each phase. (10Marks)
- b. Explain the Applications of Compiler technology. (10 Marks)

OR

- 4 a. How is input buffering at lexical Analyzer implemented? Write an Algorithm to look ahead code with sentinels. (10 Marks)
- b. Construct the Transition diagrams for : (10 Marks)
- i) Identifiers ii) Relop

Module-3

- 5 a. Eliminate the left Recursion from the grammar : (10 Marks)
- $A \rightarrow Bc \mid a$
 $B \rightarrow CA \mid Ab$
 $C \rightarrow AB \mid CC \mid a$
- b. Construct Predictive Parsing table by making necessary changes to grammar given below and show parsing of string "id + id * id". (10 Marks)
- $E \rightarrow E + T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E) \mid id$

OR

- 6 a. Compute FIRST () and FOLLOW () for the following grammar (10 Marks)
- $S \rightarrow (L) \mid a$
 $L \rightarrow L, S \mid S$
- b. Define Handle Pruning. Explain the Shift Reduce Parsing with example. (10 Marks)

Module-4

- 7 a. Define Regular Expression. Explain various regular expression with example. (10 Marks)
- b. Write a LEX program to count the number of vowels and consonants in given string. (10 Marks)

OR

- 8 a. Write a YACC program to recognize an Arithmetic expression involving operators +, -, *, | (10 Marks)
- b. Explain the structure of YACC program. (10 Marks)

Module-5

- 9 a. Give SDD to process Simple Desk Calculator and show Annotated parse tree for expression $3 * 5 + 4n$. (10 Marks)
- b. Give SDD for simple variable declaration in C and Construct the Dependency graph for the following expression : (10 Marks)
- int a, b, c ;

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OR

- 10 a. Discuss the Issues in Design of a Code Generator. (10 Marks)
- b. Construct Directed Acyclic Graph for the Expression " $a + a * (b - c) + (b - c) * d$ ". Also give sequence of steps for constructing the same. (10 Marks)
