



USN

Grid for USN number

10IS662

Sixth Semester B.E. Degree Examination, June/July 2023
Compiler Design

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1 a. Explain the differential phases of a compiler by considering the following statement as input a = b + c * 60 (10 Marks)
b. Explain the concept of input buffering in the lexical analysis phase of a compiler. (06 Marks)
c. Construct transition diagram to recognize the tokens given below: (04 Marks)
(i) Identifiers (ii) Relational operators.
2 a. Briefly explain the problems associated with top-down parser. (12 Marks)
b. Explain the role of the parser in compiler model. (04 Marks)
c. Explain error recovery strategies in parser. (04 Marks)
3 a. What is a shift reduce parser? Explain the conflict that may occur during shift reduce parsing. (04 Marks)
b. What is handle pruning? Explain with the help of the grammar S -> SS + | SS* | a and input string aaa*a++. (08 Marks)
c. Give Bottom-up parsing for the strings 000111 and grammar S -> 0S1 | 01 and construct parse tree in each step of deviation. (08 Marks)
4 a. Construct SLR Parsing table for the following grammar : X -> Xb, X -> a and show the moves made by the parser on the input string abb. (12 Marks)
b. Construct LALR parsing table for the grammar, S -> CC, C -> aC/d (08 Marks)

PART - B

- 5 a. Write a SDD for desktop calculator. (04 Marks)
b. Assume suitable SDD to construct a syntax tree for the expression a - 4 + c and what are the steps involved in construction of that syntax tree. (08 Marks)
c. Construct annotated parse tree for 3*5 and write dependency graph for the constructed parse tree. (08 Marks)
6 a. Draw the syntax tree and DAG for the expression (a * b) + (c - d) * (a * b) + b. (08 Marks)
b. Represent the following assignment namely a = b * - c + b * - c; in its syntax tree form, three-address code, quadruples and triples representation. (12 Marks)
7 a. Discuss the general structure of activation record. (08 Marks)
b. What is meant by calling sequence and return sequence? List the calling sequence design principles. (08 Marks)
c. Write a note on garbage collection. (04 Marks)
8 a. List and briefly explain the design issues of a code generator. (10 Marks)
b. With example explain common sub-expression and dead code elimination methods. (10 Marks)

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.