

Vidyalankar Institute of Technology
Semester V – CMPN – End Semester Examination Winter 2025

Date: 14/11/2025	Subject Code:PCCE15	Subject Name: SPCD	Scheme: R2023	50 Marks/ 2 Hours
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All questions are compulsory.

1	Solve any One (10 marks each)	
A	Explain the phases of Compiler. Also comment on the types of errors identified in each of compiler with suitable examples.	CO1
B	Design minimized DFA for the regular expression $r = (a + b)^*abb$. Also give pseudo code of lexical analyzer for the same.	CO2
2	Solve any one (10 marks each)	
A	Design Recursive Descent Parser for the following grammar: $X \rightarrow X + Y \mid Y$ $Y \rightarrow Y * Z \mid Z$ $Z \rightarrow a$. Parse the string "a * a" using same.	CO3
B	Consider the grammar. $E \rightarrow E + E \mid E * E \mid (E) \mid a$ Design Operator Precedence Parsing for the given grammar and parse the input string " (a * a) ".	CO3
3	Solve any one (10 marks each)	
A	Design CLR parser for the following grammar: $E \rightarrow E + T \mid T$ $T \rightarrow id$ Also parse the string "id + id + id " using same.	CO3
B	Construct SLR parsing table for the following grammar and analyze the contents of stack and input buffer and action taken after each step while parsing the input string "id+id*id": $E \rightarrow E + T \mid T$ $T \rightarrow T * F \mid F$ $F \rightarrow id$	CO3
4	Solve any one (10 marks each)	
A	Explain the data structures used for Intermediate Code Generation with suitable example. Draw DAG for the expression- $X = a * (a - b) + c * (a - b)$;	CO4
B	What is the need for a Macro Processor? Explain Macro design with algorithm or flowchart.	CO4
5	Solve any one (10 marks each)	
A	What is forward reference problem? Explain the working of two pass Assembler with flowchart or algorithm.	CO6
B	What are the types of Code Optimization techniques? Explain any five Machine Independent Code Optimization techniques with suitable example.	CO5