



MANIPAL INSTITUTE OF TECHNOLOGY
BENGALURU
(A constituent unit of MAHE, Manipal)

VI Semester RETEST
Compiler Design (CSE_3151)

Time Duration: 2 Hours

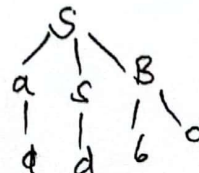
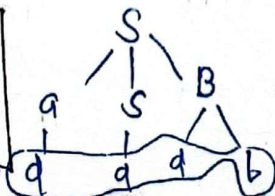
Date: 10/04/2025

Max marks: 30 MARKS

Question No	Topic	Marks	BL	CO
1	A canonical set of items is given below GATE CSE 2014 Set 1 $S \rightarrow L > R$ $Q \rightarrow R$ On input symbol $<$ the set has A. a shift-reduce conflict and a reduce-reduce conflict. B. a shift-reduce conflict but not a reduce-reduce conflict. C. a reduce-reduce conflict but not a shift-reduce conflict. D. neither a shift-reduce nor a reduce-reduce conflict.?	1	3	CO2
2	Consider two binary operators ' \uparrow ' and ' \downarrow ' with the precedence of operator ' \downarrow ' being lower than that of the operator ' \uparrow '. Operator ' \uparrow ' is right associative while operator ' \downarrow ' is left associative. Select the correct one from the following options that represents the parse tree for expression $(7 \downarrow 3 \uparrow 4 \uparrow 3 \downarrow 2)$ GATE CSE 2011 Q 27 A. B. C. D.	1	3	CO3
3	Consider the following grammar (S is the starting symbol). GATE 2020 $S \rightarrow aSB \mid d$ $B \rightarrow b$. The number of reduction steps taken by a bottom-up parser while accepting the string $aaadbbb$ is <u>6</u> ans 7	1	2	CO2
4	Select the data structure in a compiler that is used for managing information about variables and their attributes? GATE CSE 2010 A. Abstract Syntax Tree B. Semantic Stack C. Symbol Table D. Parse Table	1	2	CO1
5	Write the correct option that will match the following according to the input (from the left column) to the compiler phase (in the right column) that processes it: GATE CSE 2019 (P) Syntax Tree (i) Code Generator (Q) Character Stream (ii) Syntax Analyzer (R) Intermediate Representation (iii) Semantic Analyzer (S) Token Stream (iv) Lexical Analyzer	1	3	CO1

Q 5)

P	Semantic
Q	Lexical
R	code
S	syntax



p - iii)
Q - iv

6	Select the FALSE statement? GATE CSE 2018 <input checked="" type="checkbox"/> A. Context-free grammar can be used to specify both lexical and syntax rules <input checked="" type="checkbox"/> B. Type checking is done before parsing C. High-level language programs can be translated to different Intermediate Representations D. Arguments to a function can be passed using the program stack	1 1/1	3	CO1
7	Select the kind of derivation is used by LR parsers? GATE CSE 2019 A. Leftmost B. Leftmost in reverse C. Rightmost <input checked="" type="checkbox"/> D. Rightmost in reverse	1 1/1	3	CO2
8	Consider the following grammar G (S is the starting symbol). $S \rightarrow F H$ $F \rightarrow p c$ $H \rightarrow d c$ GATE CSE 2015 Where S, F and H are non-terminal symbols, p, d and c are terminal symbols. Select the correct statement. S1: LL(1) can parse all strings that are generated using grammar G S2: LR(1) can parse all strings that are generated using grammar G A. Only S1 - B. Only S2 <input checked="" type="checkbox"/> C. Both S1 and S2 D. Neither S1 and S2	1 1/1	3	CO3
9	Consider the augmented grammar given below: $S' \rightarrow S$ $S \rightarrow \langle L \rangle id$ $L \rightarrow L, S S$ Let $I_0 = \text{Closure}(\{S' \rightarrow \cdot S\})$. The number of items in the set $\text{GOTO}(I_0, \langle \rangle)$ is <u>3</u> Items 1-	1	3	CO2
10	Consider the context-free grammar G below for arithmetic expressions : $E \rightarrow E+E E \times E id$ Select the TRUE Statement: A. The string "id+id*id" has no parse tree according to G <input checked="" type="checkbox"/> B. The string "id+id*id" has only one parse tree according to G <input checked="" type="checkbox"/> C. The string "id+id*id" has exactly two parse trees according to G D. The string "id+id*id" has more than two parse trees according to G	1 1/1	3	CO3
11 A.	Consider the set of tokens, {ab, abc, abd, b, bc, bb, ca, cd, da, daa}. Identify the sequence of maximal length tokens generated from the input "abcabbdaadacaabcb". Develop a deterministic transition diagram for the given set of tokens. Clearly mark the start state and the final states.	5	4	CO1
11 B.	Consider the following grammar (S is the starting symbol): $S \rightarrow a X a$ $S \rightarrow b X$ $X \rightarrow c$ $X \rightarrow S c$ Construct the LR(0) automation, LR(0) Parse Table and show the parsing actions for the input "abcca".	5	3	CO2
12 A.	Develop an unambiguous CFG for strings over $\Sigma = \{id, fc, +, *, =, (,)\}$, where id is an identifier and fc is a float constant. Operators '=', '+', '*', and parenthesis '(', ')' have their usual meaning and purpose. The operator-precedence is ' $= < + < *$ '. Both '+' and '*' are left associative, but '=' is right-associative. Parenthesis '(', ')' are used to overwrite precedence and associativity.	3	4	CO3
12 B.	Consider a programming language, which supports the following tokens. ID: Identifier without numeric digits ; ID_N: Identifier with numeric digits INT: Signed integers without decimal point Develop a FLEX program to identify these tokens.	3	3	CO5
12 C.	Consider the given grammar (S is the starting symbol): $S \rightarrow Aa$ $S \rightarrow Ca$ $A \rightarrow aa$ $A \rightarrow aaba$ $B \rightarrow bbb$ $C \rightarrow aad$ $D \rightarrow bbd$ Construct the corresponding parsing table using the predictive parsing method and parse the string "aabbde".	4	3	CO2

