## V SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING) END SEMESTER MAKE UP EXAMINATIONS, FEB 2022 SUBJECT: COMPILER DESIGN [CSE 3151] REVISED CREDIT SYSTEM (19/2/2022)

MAX. MARKS: 20

	Instructions to Candidates:	
	<ul> <li>Answer ALL the questions.</li> <li>Missing data may be suitable assumed.</li> </ul>	
1A.	Draw the transition diagrams to generate tokens for the following:	<b>3</b> M
	<ul><li>i) Signed numbers.</li><li>ii) Bitwise and logical AND operators in 'C' language</li></ul>	
1B.	Consider the grammar L→En E→E+T T T→T*F F F→(E)   digit For the given expression (1+2*(3+4)+5)*6n, draw the annotated parse tree showing all the dependency edges. In addition, derive the semantic rules for the grammar.	<b>4M</b>
1C.	Draw syntax tree and Directed Acyclic Graph (DAG) for the expression A[i++] - = a[i] + a[i++] * (b[x]/z) Also write Three Address Code for the resultant DAG	3M
2A.	Consider the following grammar: $S \rightarrow A$ $A \rightarrow BC \mid DBC$ $B \rightarrow Bb \mid \varepsilon$ $C \rightarrow c \mid \varepsilon$ $D \rightarrow a \mid d$	5M
	Is this grammar suitable to be parsed using the Recursive Descent parsing method? Justify and modify the grammar if needed. Also, construct the corresponding parsing table using the predictive parsing method and show the parsing actions for the input "dbb".	
2B.	For the following grammar, construct the full LR (1) DFA, showing all items in each state. And construct the LR (1) parse table for the same. $W \rightarrow (P) \mid g$ $P \rightarrow P, W \mid W$	3M
2C.	What are the different methods used by the Lexical Analyzer used to handle the reserved words and identifiers? Explain them with the help of an example.	2M