

Nirma University
Institute of Technology
Sessional Examination, Oct-2023

B.Tech. in Computer Science & Engineering, Semester -VII
2CS701 – Compiler Construction

Roll /

Supervisor's Initial

Exam No.

Time: 2 Hours

Date: 9th Oct 2023

Max Marks: 50

- Q.1 Do as directed** [18]
- A Show that the following grammar is LALR(1) but not SLR (1) [6]
 $S \rightarrow Aa \mid bAc \mid dc \mid bda$
 $A \rightarrow d$
- B For the following grammar, find FIRST and FOLLOW sets for each non-terminal. [6]
 $S \rightarrow ACB \mid Cbb \mid Ba$
 $A \rightarrow da \mid BC$
 $B \rightarrow g \mid \epsilon$
 $C \rightarrow h \mid \epsilon$
- C What is the relation between S-Attributed definition and L-attributed definition? [6]
Write down Which of the following definition are S-attributed and L-attributed.
1. $P \rightarrow QR \{ R.val = Q.val \}$
2. $P \rightarrow QR \{ R.val = Q.val \text{ and } P.val = R.val \}$
3. $P \rightarrow QR \{ Q.val = R.val \text{ and } P.val = R.val \}$
- Q.2 Do as directed** [16]
- A Design CLR parsing table for the following grammar. (8)
 $S \rightarrow L = R \mid R$
 $L \rightarrow *R \mid id$
 $R \rightarrow L$
- B What is the role of Semantic analysis in compiler design? Write SDT for converting [8]
binary number into decimal with fraction part and evaluate the string 111.1010
- Q.3 Do as directed** [16]
- A What is dependency graph? Construct dependency graph for the expression $a-4+c$ [8]
using syntax directed definition of
 $E \rightarrow TE1$
 $E1 \rightarrow +TE1 \mid -TE1 \mid \epsilon$
 $T \rightarrow (E) \mid id \mid num$
- B Construct operator precedence function table from the given operator precedence [8]
relation table and trace the string $(id+id)*id$.
 $E \rightarrow E + E \mid E * E \mid (E) \mid id$

	\$	+	*	()
\$	=	<	<	<	<
=	>	>	<	<	>
*	>	>	>	<	>
(<	<	<	=
)	>	>	>		>