

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3170701****Date:22-11-2024****Subject Name: Compiler Design****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Differentiate the following terms 1) interpreter and compiler 2) parse tree and syntax tree	03
(b) Explain input buffering technique	04
(c) Explain phases of compiler with an example	07
Q.2 (a) Explain lexeme, token and pattern with an example	03
(b) Explain left recursion with an example	04
(c) Construct transition diagram for relational operators. Explain roles of assembler, loader, linker and preprocessor	07
OR	
(c) Construct DFA without constructing NFA for the regular expression $(a+b)^*abb$ over input alphabets $\Sigma = \{a,b\}$	07
Q.3 (a) Compare top down and bottom up parsing	03
(b) Explain left factoring of grammar with an example	04
(c) Design LL (1) parsing table for the following grammar $E \rightarrow E + T \mid T$ 2) $T \rightarrow T * F \mid F$ 3) $F \rightarrow (E) \mid id$	07
OR	
Q.3 (a) Explain operator precedence parsing	03
(b) Explain ambiguous grammar with an example	04
(c) Design LALR parsing table for the following grammar $S \rightarrow CC$ $C \rightarrow cC \mid d$	07
Q.4 (a) Explain flow graph with suitable example	03
(b) Draw annotated tree for an arithmetic expression $9+5-2$	04
(c) Briefly explain error recovery strategies	07
OR	
Q.4 (a) Explain symbol table	03
(b) Write a short note on syntax directed definition	04
(c) Explain Quadruples, Triple, Indirect Triple with an example	07
Q.5 (a) Explain stack allocation strategy	03
(b) Explain various parameter passing methods	04
(c) Explain peephole optimization technique	07
OR	
Q.5 (a) Compare: static v/s dynamic memory allocation	03
(b) Explain activation record	04
(c) Explain any three code optimization techniques in detail	07
