GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 2170701   **Date: 24-11-2025**

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)**	Define compiler, interpreter and assembler.	**03**
	(b)	Explain error recovery strategies in brief.	**04**
	(c)	Discuss phases of compiler in detail.	**07**
Q.2	**(a)**	Write a regular expression to match a date in the format DD/MM/YYYY, allowing valid days 01–31 and months 01–12.	**03**
	(b)	Explain the difference between NFA and DFA with example.	**04**
	(c)	Explain subset construction method to construct DFA with example.	**07**

OR

	(c)	Explain input buffering techniques in detail.	**07**
Q.3	**(a)**	Explain S-Attributed Definitions and L-Attributed Definitions.	**03**
	(b)	Find out FIRST and FOLLOW for the following grammar.	**04**

S-> 1AB | ε
A-> 1AC | 0C
B-> 0S
C-> 1

	(c)	Construct a SLR parsing table for following grammar.	**07**

S -> aAb | bB
A -> Aa | ϵ
B -> Bb |ϵ

OR

	(a)	Give the difference between top down parsing and bottom up parsing.	**03**
	(b)	Check the following grammar is operator or not. Justify your answer.	**04**

E -> EOE
E -> id
O -> * | + | -

(c)	Check whether the given grammar is LL (1) or not?	**07**

(c) Check whether the given grammar is LL (1) or not? **07**
S -> aAC | bB
A -> Abc | Abd | e
B -> f | g
C -> h |i

Q.4 (a) Create syntax tree for the following: **03**
(x+y)*(z-w)/(u+v)

(b) Write a short note on activation records. **04**

(c) Describe Quadruples, Triples and Indirect Triples form of three address code with a suitable example. **07**

OR

(a) Create three address code for the following: **03**
(a+b)*(c+d)+(a+b+c)

(b) Write a short note on symbol table management. **04**

(c) Discuss various storage allocation strategies in detail. **07**

Q.5 (a) Explain Flow Graph with suitable example. **03**

(b) Explain common sub expression removal technique with example. **04**

(c) Explain peephole optimization techniques with example. **07**

OR

(a) Explain DAG with suitable example. **03**

(b) Explain strength reduction technique with example. **04**

(c) Explain issues in the design of a code generator. **07**

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