

GUJARAT TECHNOLOGICAL UNIVERSITY
BE IV - SEMESTER VII (NEW SYLLABUS) EXAMINATION- SUMMER - 2018

Subject Code: 2170701

Date: 28/04/2018

Subject Name: Compiler Design

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1**
- | | | |
|-----|---|----|
| (a) | Define cross compiler, token and handle. | 03 |
| (b) | Draw transition diagram for relational operators. | 04 |
| (c) | Explain phases of compiler with example. | 07 |

- Q.2**
- | | | |
|-----|--|----|
| (a) | Explain panic mode recovery strategy. | 03 |
| (b) | Write a short note on input buffering method. | 04 |
| (c) | Explain subset construction method with example. | 07 |

OR

- | | | |
|--|--|----|
| | (c) Draw DFA for the following regular expression using firstpos(), lastpos() and followpos() functions.
$(a b)^* a$ | 07 |
|--|--|----|
- Q.3**
- | | | |
|-----|---|----|
| (a) | What is operator grammar? Check the following grammar is operator or not. Justify your answer.
$E \rightarrow EOE$
$E \rightarrow id$
$O \rightarrow * + -$ | 03 |
| (b) | Check the following grammar is left recursive or not. Justify your answer. If Left recursive then make grammar as non-left recursive.
$S \rightarrow (L) a$
$L \rightarrow L , S S$ | 04 |
| (c) | Construct CLR parsing table for the following grammar.
$S \rightarrow CC$
$C \rightarrow cC d$ | 07 |

OR

- | | | |
|--|--|----|
| | (c) Consider the following grammar and construct the corresponding left most and right most derivations for the sentence abab.
$S \rightarrow aSbS bSaS \epsilon$ | 03 |
|--|--|----|
- Q.3**
- | | | |
|-----|---|----|
| (b) | Find out FIRST and FOLLOW for the following grammar.
$S \rightarrow 1AB \epsilon$
$A \rightarrow 1AC 0C$
$B \rightarrow 0S$
$C \rightarrow 1$ | 04 |
| (c) | Explain SLR parsing method with example. | 07 |
- Q.4**
- | | | |
|-----|--|----|
| (a) | What is symbol table? For what purpose , compiler uses symbol table? | 03 |
| (b) | Write a short note on activation record. | 04 |
| (c) | Write syntax directed definition for simple desk calculator. Using this definition, draw annotated parse tree for $3*5+4n$. | 07 |

OR

Q.4	(a) Explain algebraic simplifications and flow of control optimization characteristics of peephole optimization.	03
	(b) Explain Quadruples and Triples form of three address code with example.	04
	(c) What is inherited attribute? Write syntax directed definition with inherited attributes for type declaration for list of identifiers.	07
Q.5	(a) Draw a DAG for expression: $a + a * (b - c) + (b - c) * d$.	03
	(b) Compare: Static v/s Dynamic Memory Allocation.	04
	(c) Explain any three code optimization methods.	07
OR		
Q.5	(a) Write difference(s) between stack and heap memory allocation.	03
	(b) Explain any two methods of parameter passing.	04
	(c) Explain various issues in design of code generator.	07
