

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (Old) EXAMINATION – WINTER 2019

Subject Code: 170701

Date: 30/11/2019

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.

Q.1 (a) Explain the analysis synthesis model of compilation. List the factors that affect the design of compiler. Also List major functions done by compiler. **07**

(b) What does the linker do? What does the loader do? What does the preprocessor do? Explain their role(s) in compilation process. **07**

Q.2 (a) Construct a DFA for a given regular expression $(010+00)^*(10)^*$ **07**

(b) Write a brief note on input buffering techniques to Lexical Analyzer. **07**

OR

(b) Explain Shift-Reduce parsing with suitable example. **07**

Q.3 (a) Test whether the following grammar is LL (1) or not. Construct predictive parsing table for it. **07**

$S \rightarrow 1AB|C$

$A \rightarrow 1AC|0C$

$B \rightarrow 0S$

$C \rightarrow 1$

(b) What is Intermediate form of the code? What are the advantages of it? What are generally used intermediate forms? **Write N-Tuple notation for:**
 $(a+b)^*(c+d)-(a+b+c)$ **07**

OR

Q.3 (a) Construct the canonical parsing table for the following Grammar **07**

$S' \rightarrow S$

$S \rightarrow CC$

$C \rightarrow cC|d$

(b) What is the difference between parse tree and syntax tree? Write appropriate grammar and draw parse as well as syntax tree for $a^*(a-a^a)$ **07**

Q.4 (a) Eliminate left recursion from the following grammar and rewrite the Grammar. **07**

$S \rightarrow Aa|b$

$A \rightarrow Ac | Sd | \epsilon$

(b) Explain the types of attributed grammar? Which phase of the compilation process does it facilitate? Explain with example. **07**

OR

Q.4 (a) Explain activation record. How is task divided between calling & called program for stack updating? **07**

(b) Explain: Error Recovery Strategies in Compiler in brief. **07**

Q.5 (a) Explain various code optimization techniques. **07**

(b) Explain: Symbol Table Management. How symbol table differs from other data structures? **07**

OR

Q.5 (a) Discuss generic issues in the design of code generation. **07**

(b) Compare Static and Dynamic memory allocation. **07**
