

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII • EXAMINATION – WINTER 2013

Subject Code: 170701

Date: 26-11-2013

Subject Name: Compiler Design

Time: 10.30 am - 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) Draw structure of Compiler. Also explain Analysis Phase in brief. **07**
(b) Draw Deterministic Finite Automata for the binary strings ending with 10. **04**
(c) Write down the algorithm for left factoring. **03**
- Q.2** (a) Write a brief note on input buffering techniques to Lexical Analyzer. **07**
(b) Write down C program for Recursive Descend Parser for : **07**
 $S \rightarrow ABC$ $B \rightarrow 1B \mid \wedge$
 $A \rightarrow 0A1 \mid \wedge$ $C \rightarrow 1C0 \mid \wedge$
- OR**
- Q.2** (a) Explain Shift-Reduce parsing with suitable example. **07**
(b) Draw parsing table for Table Driven Parser for the given grammar. Is the grammar LL(1)? **07**
 $A \rightarrow AaB \mid x$ $B \rightarrow BCb \mid Cy$ $C \rightarrow Cc \mid \wedge$
- Q.3** (a) What is Inherited attribute? Explain with suitable example. **06**
(b) Write down steps to set precedence relationship for Operator Precedence Grammar. Design precedence table for: **08**
 $E \rightarrow E + T \mid T$ $T \rightarrow T * F \mid F$ $F \rightarrow a$
- OR**
- Q.3** (a) Explain how panic mode recovery can be implemented. **07**
(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) Write SLR parsing table for : $S \rightarrow T$ $T \rightarrow CC$ $C \rightarrow cC$ $C \rightarrow d$ **08**
(b) Explain Stack Allocation and Activation Record Organization in brief. **06**
- OR**
- Q.4** (a) Write a note on Peephole Optimization. **08**
(b) Explain quadruple, triple and indirect triple with suitable example **06**
- Q.5** (a) Explain the roles of linker, loader and preprocessor. **08**
(b) Differentiate: static v/s dynamic memory allocations. **03**
(c) Write down the regular expression for the binary strings with even length. **03**
- OR**
- Q.5** (a) Discuss generic issues in the design of code generation. **07**
(b) Write down the algorithm for partitioning of basic blocks. **07**
