

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII • EXAMINATION – WINTER • 2014

Subject Code: 170701

Date: 25-11-2014

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)** Explain Buffer pairs and Sentinels. **07**
(b) Draw Transition diagram of following: **07**
i. relational operators.
ii. unsigned operator.
- Q.2 (a)** Explain recursive-descent and predictive parsing. **07**
(b) Construct minimum state DFA's for following regular expressions. **07**
i. $(a|b)^*a(a|b)$
ii. $(a|b)^*a(a|b)(a|b)$
- OR**
- (b)** What do you understand by a handle? Explain the stack implementation of shift reduce parser with the help of example. **07**
- Q.3 (a)** Show that the following grammar $S \rightarrow AaAb \mid BbBa$ $A \rightarrow \epsilon$ $B \rightarrow \epsilon$ is LL(1) but not SLR(1). **07**
(b) Show that the following grammar $S \rightarrow Aa \mid bAc \mid dc \mid bda$ $A \rightarrow d$ is LALR(1) but not SLR(1). **07**
- OR**
- Q.3 (a)** Show that the following grammar $S \rightarrow Aa \mid bAc \mid Bc \mid bBa$ $A \rightarrow d$ $B \rightarrow d$ is LR(1) but not LALR(1). **07**
(b) Explain various error recovery strategy of compilers **07**
- Q.4 (a)** Construct a Syntax-Directed Translation scheme that translates arithmetic expressions from infix into postfix notation. Show the application of your scheme to the string "3*4+5*2". **07**
(b) What is the use of a symbol table? How identifiers are stored in the symbol table? **07**
- OR**
- Q.4 (a)** Explain quadruple, triple and indirecttriple with suitable example. **07**
(b) Explain with an appropriate example how to perform bottom up evaluation of an inherited attributes. **07**
- Q.5 (a)** Explain various code optimization technique. **07**
(b) Describe algorithm for global common subexpression elimination. **07**
- OR**
- Q.5 (a)** Explain code generator design issues. **07**
(b) Explain Stack allocation and Activation record organization in brief. **07**
