

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014****Subject code: 1720103****Date: 20-06-2014****Subject Name: Advance Compiler Design****Time: 02:30 pm - 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) Explain the language dependent and machine independent phases of compiler. **07**
Also List major functions done by compiler.
- (b) Explain the algorithm for left factoring **04**
- (c) Explain the terms: tokens, lexemes, Pattern with example. **03**
- Q.2** (a) (i) Perform the Left factoring of following Grammar **03**
A \rightarrow ad | a | ab | abc | b
(ii) Find out FIRST & FOLLOW set for all the Nonterminals **04**
S \rightarrow Aa | bAc | Bc | bBa
A \rightarrow d
B \rightarrow d
- (b) Construct a DFA for a given regular expression (a|b)*abb(a|b)* **07**
OR
- (b) Verify whether the following grammar is LR(0) or not. **07**
S \rightarrow L = R
L \rightarrow *R
R \rightarrow L
S \rightarrow R
L \rightarrow id
- Q.3** (a) What are conflicts? What are their types? Explain with an example. **07**
- (b) Write a program to implement simple calculator using LEX and YACC **07**
OR
- Q.3** (a) How to detect a loop in the flow graph? When you will say a flow graph is reducible? **07**
- (b) What is DAG? Why do you use DAG for representing the intermediate code? **07**
- Q.4** (a) Differentiate between: **07**
1) Synthesized and Inherited attributes
2) Top-Down parsing and Bottom-Up parsing
- (b) Explain how type checking & error reporting is performed in a compiler. Also explain the Error Recovery Strategies. **07**
OR
- Q.4** (a) Translate the arithmetic expression $a=b*(c+d)$ into **07**
1. Syntax tree
2. Postfix notation
3. Various forms of three address code
- (b) Write a note on Peephole Optimization. **07**
- Q.5** (a) Explain activation record. How is task divided between calling & called program for stack updating? **07**
- (b) What is the significance of the registers in code generation? Also Explain the Coloring Algorithm for register allocation. **07**

OR

- Q.5** **(a)** Explain the algorithm of Liveness Analysis with an example
 (b) Discuss symbol table management in detail.

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