Printed Pages:2 Sub Code: RCS602

Paper Id: 110263 Roll No.

BTECH
(SEM VI) THEORY EXAMINATION 2018-19
COMPILER DESIGN

Time: 3 Hours *Total Marks: 70*

Note: **1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** **2 x 7 = 14**

a. What are the two parts of a compilation? Explain briefly.
b. What is meant by viable prefixes?
c. What are the classifications of a compiler?
d. List the various error recovery strategies for a lexical analysis.
e. What is dangling else problem?
f. What are the various types of intermediate code representation?
g. Define peephole optimization.

SECTION B

2. **Attempt any *three* of the following:** **7 x 3 = 21**

a. Write the quadruples ,triple and indirect triple for the following expression:
(x+y)*(y+z)+(x+y+z)

b. What are the problems with top down parsing? Write the algorithm for FIRST and FOLLOW.

c. Perform Shift Reduce Parsing for the given input strings using the grammar
S->(L)|a
L->L,S|S
i) (a,(a,a))
ii) (a,a)

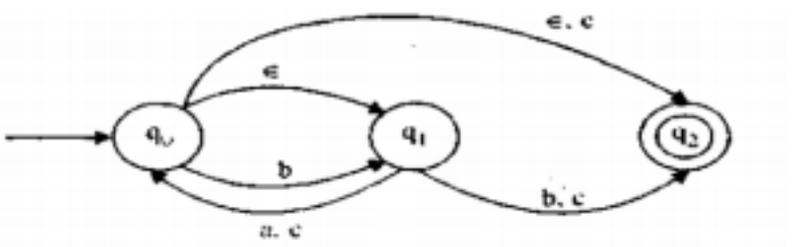
d. What is global data flow analysis? How does it use in code optimization?

e. Construct LR(0) parsing table for the following grammar
S-> cB | ccA
A->cA | a
B-> ccB | b

SECTION C

3. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Convert following NFA to equivalent DFA and hence minimize the number of states in the DFA.



(b) Explain the various parameter passing mechanisms of a high level language.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) How would you represent the following equation using DAG?

a:=b*-c+b*-c

(b) Distinguish between static scope and dynamic scope. Briefly explain access to non-local names in static scope.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Write short notes on the following with the help of example:
- (i) Loop unrolling
- (ii) Loop Jamming
- (iii) Dominators
- (iv) Viable Prefix

(b) Draw the format of Activation Record in stack allocation and explain each field in it.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Write down the translation procedure for control statement and switch statement

(b) Define Syntax Directed Translation. Construct an annotated parse tree for the expression (4 * 7 + 1) * 2, using the simple desk calculator grammar.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain in detail the error recovery process in operator precedence parsing method.

(b) Explain what constitute a loop in flow graph and how will you do loop optimizations in code optimization of a compiler.