SARDAR PATEL UNIVERSITY
M.Sc.IT Examination, 9th Semester (Integrated)
Saturday, 22nd October, 2016
Subject Code: PS09CIIT03
Subject: Compiler Design

Time: 10:00 A.M to 01:00 P.M , Morning   Total Marks: 70

Q.1   Multiple Choice Questions.   08

1. Which of the following is responsible for grouping of characters into tokens in compiler?
   - A. Parser
   - B. Code generator
   - C. Scanner
   - D. Code optimizer

2. Intermediate code generation phase gets input from_____
   - A. Lexical analyzer
   - B. Semantic analyzer
   - C. Error handling
   - D. Syntax analyzer

3. For the expression grammar:
   E->E*F |F+E | F
   F->F - id | id
   The statement, which holds true, is
   - A. + and - have same precedence
   - B. Precedence of * is higher +
   - C. Precedence of + is higher *
   - D. Precedence of - is higher *

4. The pattern for number is _____
   - A. digit+
   - B. digit (.digits)
   - C. digits(.digits)?(E[+-]? digits)?
   - D. digits(E[+-]? digits)?

5. _____is a graph representation of a derivation.
   - A. The parse tree
   - B. The oct tree
   - C. The binary tree
   - D. None of the above

6. Whether a given pattern constitutes a token or not _____
   - A. It depends on the source language
   - B. It depends on the compiler
   - C. It depends on the target language
   - D. None of the above comment is true

7. Input to code generator_____
   - A. Source code
   - B. Intermediate code
   - C. Target code
   - D. All of the above

8. _____is a top down parser.
   - A. operator precedence
   - B. shift-reduce
   - C. LL(1)
   - D. none of these

(P.T.O)

(1)

Q.2   Answer the following questions in short. (Any 07)   14

1) What do you mean by ambiguous grammar? Explain with example.

2) Define finite automata.

3) Explain dead code elimination with example.

4) Define: Tokens, Lexeme and Patterns.

5) List out issues in the design of code generator.

6) List the phases that constitute the front end of a compiler.

7) Define : Machine independent optimizations, Machine dependant optimizations

8) What do you mean by regular definition?

9) Write first() and follow() for the following grammar:

   S→Bb|Cd
   B→aB|ε
   C→cC| ε

Q.3(A) Draw structure of Compiler. Also explain Analysis Phase in brief.   06
   (B) Explain Compiler Construction tools.   06

                                          OR
   (B) Explain the back end phases of a compiler.   06

Q.4(A) What is regular expression? Give all the algebraic properties of regular   06
        expression.
   (B) Draw the state transition diagram for the unsigned numbers and relational   06
        operators.

                                          OR
   (B) Draw NFA and state transition table for the following: 06
        1) (a|b)*abb
        2) (a|b) *a(a|b)

Q.5(A) Explain Operator Precedence Parsing method with example.   06
   (B) What is left recursion? Eliminate the left recursion from the following   06
        grammar.
        E → E + T | T
        T →T * F | F
        F → (E) | id

                                          OR
   (B) Explain Recursive Descent Parser with example.   06

Q.6(A) Explain in brief: Intermediate Code Generation.   06
   (B) Translate the expression a : = b * - c + b * - c into   06
        1. Quadruples
        2. Triples
        3. Indirect triples

                                          OR
   (B) Write a note on Principle sources of optimization.   06
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