C 18261 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2011

Computer Science

CS 04 605—COMPILER DESIGN

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer all *questions.*

1. (a) List down the issues in hexical analysis phase.

   (b) Name the tool for specifying lexical analyzer and draw a block schematic diagram of its functioning.

   (c) What are problems encountered in recursive descent parsers ? How are they eliminated ?

   (d) Define a context free grammar. Write a context free grammar to generate palindromes using the set of $\{a, b\}$.

   (e) Write the syntax directed definition for constructing a syntax tree of an expression.

   (f) Explain activation free with suitable example.

   (g) Distinguish between triples and indirect triples representation of three-address statements.

   (h) Explain the process of code motion with example.

   ($8 \times 5 = 40$ marks)

2. (a) Consider the following while statement :

   While A > B & A < = 2 * B – 5 do

   A:= A + B ;

   Write down the outputs generated at each phase of the compiler and briefly discuss how the outputs are generated.

   Or

   (b) Construct a minimum-state DFA for the regular expression $(a/b)^* abb\,(a/b)^*$.

3. (a) Construct an SLR parsing table for the following grammar :

   $S \rightarrow xAy / xBy / xAz$

   $A \rightarrow aS/q$

   $B \rightarrow q$.

   Or

   (b) (i) Explain the predictive parsing algorithm. (8 marks)

   (ii) Write the rules for finding the first and follow elements for a grammar. (7 marks)

Turn over

4. (a) Write the algorithm to design a predictive translator. Explain the algorithm with suitable example.

Or

(b) Explan the static storage allocation strategy with suitable example.

5. (a) Write and explain the syntax-directed definition for four different flow of control statements.

Or

(b) Explain the various issues in the design of a code generator.

(4 × 15 = 60 marks)