(CSE 413)

IV/IV B.Tech. DEGREE EXAMINATION, APRIL 2005.

First Semester

COMPILER DESIGN

Time : Three hours Maximum : 70 marks

Answer Question No. 1 compulsorily. (1 × 14 = 14)

Answer ONE question from each Unit. (4 × 14 = 56)

All questions carry equal marks.

1. (a) What is meant by compiler?
   (b) Mention any two functions of scanner.
   (c) What is parsing?
   (d) What is LEX?
   (e) Define LR(O) grammar.
   (f) What is reduction in strength?
   (g) What is cross compiler?
   (h) Define Directed Acyclic graph (DAG).
   (i) Type conversion.
   (j) Define handle.

(k) Recursive descent method.

(l) Lexical analysis.

(m) Back patching.

(n) What is common sub expression elimination?

UNIT I

2. (a) Describe various phases of a compiler while translating following assignment statement into assembly languages :

amount = principle + rate * 40. (14)

Or

(b) Construct a minimum state DFA for the following regular expression $(a/b)^*a(a/b)$. (6)

(c) Define token, lexeme and pattern. Give examples for each. (8)

UNIT II

3. (a) Write algorithm for nonrecursive predictive parsing. (7)

(b) Generate parsing table for the following grammar : (7)

$E \rightarrow E + T/T$

$T \rightarrow T * F/F$

$F \rightarrow (E)/id.$

Or

(c) Write short notes on operator–precedence parsing. (7)

(d) Write short notes on YACC tool. (7)

UNIT III

4. (a) Translate a * –(b + c) into post fix form. (4)

(b) Explain the data structures used for symbol tables. (10)

Or

(c) Write short notes on quadruples, triples and indirect triples with suitable example (8)

(d) Differentiate between syntax directed definition and translation scheme. (6)

UNIT IV

5. (a) Explain briefly the following code optimization techniques : (8)

(i) Folding.

(ii) Strength reduction.

(b) Discuss error recovery in LR parsers. (6)

Or

(c) Write short notes on peephole optimization technique. (6)

(d) Construct the dag for the following basic block : (8)

d : = b * c

c : = a + b

b : = b * c

a : = e – d.
