

M.E DEGREE EXAMINATIONS: APRIL 2010

Second Semester

COMPUTER SCIENCE AND ENGINEERING

P07CS203: Compiler Design

Time: Three Hours

Maximum Marks: 100

Answer All Questions:-

PART A (10 x 2 = 20 Marks)

1. Define Preprocessor.
2. What is a compiler?
3. Define the terms: lexeme, pattern.
4. What is recognizer?
5. What do you mean by handle pruning?
6. What is an ambiguous grammar? Give an example.
7. What are the various methods of implementing three address statements?
8. What is back patching?
9. How do you represent the following equation using DAG?

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

10. What is code motion?

PART B (5 x 16 = 80 Marks)

11. a) (i) Explain the various phases of compiler in detail. (10)
- (ii) Write short notes on compiler construction tools. (6)

(OR)

- b) (i) What are the elements of a formal Language Grammar? Explain it with example. (10)
- (ii) Explain about Grouping of phases. (6)

12. a) (i) Explain briefly about recognition of tokens. (7)
- (ii) Draw the Transition diagram for Identifier, Constant, relation operators. (9)

(OR)

- b) Construct a NFA for the given regular expression and convert it to a DFA $(a/b)^*abb$.

13. a) (i) Explain various error recovery strategies in parser. (4)
- (ii) Check whether the given grammar is LL (1) grammar or not. Give reason. (12)

$$E \rightarrow E + T / T, T \rightarrow T * F / F, F \rightarrow (E) / id$$

(OR)

b) Construct a canonical parsing table for the grammar given below

$S \rightarrow CC$

$C \rightarrow cC / d$

14. a) (i) Explain about Implementation of three- address statements. (6)

(ii) Translate the statements into three address code using back patching. (10)

If $a < b$ and $c < d$ then

$a = b + a;$

else $c = c + d;$

(OR)

b) (i) Write down the translation scheme for declarations in a procedure. (8)

(ii) Translate the given statement into Three-address statement and give the translation scheme. (8)

While $a < b$ do

if $c < d$ then

$x := y + z$

else

$x := y - z$

15. a) Explain in the Principle sources of code Optimization in detail.

(OR)

b) (i) Discuss in detail about the Issues in the design of a code generator. (8)

(ii) Define symbol table? How to store names in symbol table? (8)
