

B.E., DEGREE EXAMINATIONS: MAY/JUNE 2013

Sixth Semester

COMPUTER SCIENCE AND ENGINEERING

ITY112: Principles of Compiler Design

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Input buffering is used for
 - a) Reducing parsing time
 - b) Reducing code generation time
 - c) Reducing scanning time
 - d) Reducing syntax tree generation time
2. Lexeme for an identifier is
 - a) Class
 - b) Else
 - c) Struct
 - d) Switch
3. Operator precedence parsing is not suitable for
 - a) Grammar with single production
 - b) Grammar with operator
 - c) Context free Grammar
 - d) Regular grammar
4. CLR parsing overcomes
 - a) Ambiguous problem
 - b) Shift reduce conflict
 - c) Parsing problem
 - d) Code generation problem
5. Which is not a three address code
 - a) $A=b+c$
 - b) $B=-b$
 - c) $A=b$
 - d) $A=b+c+d$
6. Implementation of three address code is
 - a) Triples
 - b) Quadruples
 - c) a&b
 - d) none of the above
7. Backpatching is used in
 - a) Creating three address code
 - b) Code generation
 - c) Parsing
 - d) Scanning
8. Loop optimization has
 - a) Code motion
 - b) Reduction in strength
 - c) Index variable optimization
 - d) All the above

9. Leader is used to
- | | |
|------------------------------|---|
| a) Find the computation time | b) Find the registers for code generation |
| c) Find the Basic blocks | d) Find the memory |
10. Address descriptor is used in
- | | |
|-------------------|-------------------|
| a) Symbol table | b) Code generator |
| c) Code optimizer | d) Parser |

PART B (10 x 2 = 20 Marks)

11. Draw NFA for identifying a^* / b^*
12. Distinguish between NFA and DFA
13. What is left recursion? Give an example
14. List out the disadvantages of top down parsing
15. Write three address code for the statement
 $P = -A + C/D - R$
16. Define Quadruple.
17. Give any four issues in Code generation
18. Write getreg function
19. What is activation record? Give an example
20. What is function preserving transformation?

PART C (5 x 14 = 70 Marks)

21. a) (i) Write about the various techniques available in input buffering? (8)
- (ii) List out different types of token recognizer and explain with example? (6)
- (OR)**
- b) (i) Write an algorithm to find ϵ closure? (4)
- (ii) Draw minimized DFA for the regular expression $a^+ / a b^*$. (10)
22. a) (i) Write an algorithm to find LR(0) items for the grammar? (10)
- (ii) Write about left factoring with an example? (4)
- (OR)**
- b) (i) Construct the predictive parsing table for the following grammar
- $be \rightarrow be \text{ or } bt / bt$
 $bt \rightarrow bt \text{ and } bf / bf$
 $bf \rightarrow not \ bf / (bf) / true / false$
- and parse the string not bf and bt or be.

23. a) Write down the translation scheme to generate three address codes for the following assignment statement with semantic action:

$A := B * C - D / (-E)$

(OR)

- b) (i) Explain about back patching with an example? (10)
(ii) Write any one of the implementations of three address code with an example? (4)

24. a) Explain about the optimization of basic blocks?

(OR)

- b) List out the issues involved in code generation and write code generation algorithm.

25. a) Explain storage allocation strategies?

(OR)

- b) Discuss in detail about the Data flow analysis of a structured program.
