



Register Number:.....

**B.E DEGREE EXAMINATIONS: NOV/DEC 2014**

(Regulation 2009)

Sixth Semester

**COMPUTER SCIENCE ENGINEERING**

ITY112: Principles of Compiler Design

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Line by Line translation is done by
  - a) Cross Assembler
  - b) Compiler
  - c) Translator
  - d) Interpreter
2. Input buffering is needed for
  - a) Reducing time to access file from a disk
  - b) Reducing time to identify tokens
  - c) Reducing time to identify lexeme
  - d) Reducing time to access regular expressions
3. Which is not a production of Context free grammar
  - a)  $A \rightarrow a/b$
  - b)  $AB \rightarrow ab$
  - c)  $A \rightarrow aB$
  - d)  $A \rightarrow B$
4. LR(1) item is collected in
  - a) SLR
  - b) Predictive
  - c) CLR
  - d) Operator Precedence
5. Back patching resolves
  - a) Three address code generation
  - b) Forward referencing
  - c) Backward referencing
  - d) Syntax tree formation
6. Which is not a three address code
  - a)  $A = b + c/d$
  - b)  $B = -b * c$
  - c)  $A = b + s$
  - d)  $A = b + c$

7. Order of precedence for evaluating an expression is carried out in
  - a) Syntax Analysis
  - b) Lexical Analysis
  - c) Semantic Analysis
  - d) Code Optimizing
8. Triples is used for
  - a) Implementing machine code
  - b) Generating three address code
  - c) Implementing three address code
  - d) Identifying three address code
9. Block is identified using
  - a) Three address code
  - b) Control flow
  - c) Data flow
  - d) Leader
10. Register Descriptor is used in
  - a) Intermediate code generation
  - b) Code Generation
  - c) Code Optimization
  - d) Assembly code generation

**PART B (10 x 2 = 20 Marks)**

11. What is the use of input buffering? State their need.
12. Draw NFA for the regular expression:  $a^*. (b/a)$
13. What are the advantages of CLR over SLR? Give an example.
14. List out the disadvantages of top down parsing.
15. Write three address code for  $s=a*b/d-s/d$ .
16. Write intermediate code for  $E := E*E$ .
17. What is Loop optimization? Give an example.
18. What is activation record? Why it is of variable size?
19. State the uses of memory descriptor and register descriptor.
20. What is function preserving statement?

**PART C (5 x 14 = 70 Marks)**

21. a) (i) Write different types of token recognizers and explain. (4)  
 (ii) Write an algorithm to find minimized DFA with all subroutines. (10)
- (OR)**
- b) (i) Convert the following NFA to minimized DFA (7)  
 $ab^* ( a / ab )^*$
- (ii) Explain the functionalities of different phases of a compiler. (7)
22. a) Write an algorithm to parse a string using predictive parsing with all sub routines.

**(OR)**

- b) (i) Collect LR(0) items for the grammar (7)

$S \rightarrow AS / b$

$A \rightarrow SA / a$

- (ii) Write a note on Shift reduce parsing. (7)

23. a) Explain about back patching for flow of control with example.

**(OR)**

- b) (i) With an example explain different types of three address code implementation. (7)

- (ii) Write intermediate code for procedures. (7)

24. a) List out the issues involved in code generation and write code generation algorithm.

**(OR)**

- b) (i) How will you find basic blocks in intermediate code? Explain with an example. (7)

- (ii) Discuss about any four types of code optimization. (7)

25. a) (i) Write a note on Stack allocation. (7)

- (ii) What is data flow analysis? Explain with an example. (7)

**(OR)**

- b) Explain in detail the principal sources of code optimization.

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