

SUBJECT CODE:- 304
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(CSE) Examination Nov/Dec 2015
Principles of Compiler Design
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B i) Q. no 1 and Q.no6 are compulsory.
 ii) Attempt any two questions from Q.2 to Q.5 and from Q. 7 to Q. 10 of each section.
 iii) Figures to the right indicate full marks.

Section A

- Q.1 a) What is a compiler? State and explain various phases of compiler in detail. 10
 b) List and explain any six compiler construction tools.
- Q.2 a) Write short note on Input Buffering. 07
 b) Explain role of lexical analyzer. Also explain about patterns, tokens and lexemes, with suitable examples. 08
- Q.3 a) Compare between top- down parsing and bottom up parsing methods. 07
 b) Draw the transition diagrams to recognize following tokens-relational operators, unsigned numbers and white spaces. 08
- Q.4 a) With suitable example, explain implementation of shift reduce parser. 07
 b) Consider following grammar – 08

$$E \rightarrow E + T | T$$

$$T \rightarrow T * F | F$$

$$F \rightarrow (E) | id$$

Draw canonical collection of sets of LR(0) items.

- Q.5 a) Write short note on LALR parser 07
 b) Write and explain steps for creating an Input/ Output translator with yacc. 08

SECTION-B

- Q.6 a) What is directed Acyclic graph for expressions? Construct the DAG for the expression 10
 $a + a * (b - c) + (b - c) * d$
 b) Explain with suitable example, quadruples, triples and indirect triples.
- Q.7 a) What is Syntax Directed Definitions? Explain inherited and synthesized attributes. 07
 b) With suitable example, explain the steps to construct syntax tree for expressions. 08
- Q.8 a) Write short note on – Type checking and type conversion. 07
 b) What is code optimization? With suitable example explain 08
 1) Semantics preserving transformations
 2) Global common sub expressions
 3) Copy propagation
 4) Dead code elimination
- Q.9 a) Explain with suitable example, loop unrolling loop jamming and constant folding 07
 b) Discuss various issues in the design of code generator. 08
- Q.10 a) What is peephole optimization? Explain following examples of program transformations that are 08
 characteristics of peephole optimization-
 1) Redundant instruction elimination
 2) Flow of control optimization
 3) Algebraic simplification and reduction in strength.
 4) Eliminating unreachable code
 b) Write short note on Register allocation and assignment. 07