

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 characteristics of peephole optimization- 08
- 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