

Reg. No. :

Question Paper Code : 57263

B.E. / B.Tech. DEGREE EXAMINATION, MAY / JUNE 2016

Sixth Semester

Computer Science and Engineering

CS6660 – COMPILER DESIGN

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL Questions

Part A – (10 × 2 = 20 marks)

1. What are the two parts of a Compilation? Explain briefly.
2. Illustrate diagrammatically how a language is processed.
3. Write a grammar for branching statements.
4. List the operations on languages.
5. Write the algorithm for FIRST and FOLLOW in parser.
6. Define ambiguous grammar.
7. What is DAG?
8. When does a Dangling reference occur?
9. What are the properties of optimizing Compiler?
10. Write the three address code sequence for the assignment statement $d := (a-b) + (a-c) + (a-c)$.

Part B – (5 × 16 = 80 marks)

- 11 (a) Discuss the various phases of compiler and trace it with the program statement (position = initial + rate * 60). (16)

Or

- (b) (i) Explain language processing system with neat diagram. (8)
(ii) Explain the need for grouping of phases. (4)
(iii) Explain various Errors encountered in different phases of compiler. (4)

- 12 (a) (i) Differentiate between Lexeme, Tokens and pattern. (6)
(ii) What are the issues in lexical analysis? (4)
(iii) Write note on Regular Expressions. (6)

Or

- (b) (i) Write notes on Regular expression to NFA. Construct Regular expression to NFA for the sentence $(ab)^*a$. (10)
(ii) Construct DFA to recognize the language $(a/b)^*ab$ (6)

- 13 (a) (i) Construct Stack implementation of shift reduce parsing for the grammar (8)
 $E \rightarrow E + E$
 $E \rightarrow E * E$
 $E \rightarrow (E)$
 $E \rightarrow id$ and the input string $id1 + id2 * id3$.
- (ii) Explain LL(1) grammar for the sentence $S \rightarrow iEtS \mid iEtSeS \mid a$ $E \rightarrow b$. (8)

Or

- (b) (i) Write an algorithm for Non Recursive Predictive Parser. (6)
(ii) Explain Context free grammar with examples. (10)

- 14 (a) (i) Construct a syntax directed definitions for constructing a syntax tree for assignment statements. (8)
 $S \rightarrow id = E$
 $E \rightarrow E1 + E2$
 $E \rightarrow E1 * E2$
 $E \rightarrow - E1$
 $E \rightarrow (E1)$
 $E \rightarrow id$
- (ii) Discuss specification of a simple type checker. (8)

Or

- (b) Discuss different storage allocation strategies. (16)

- 15 (a) Explain Principal sources of optimization with examples. (16)

Or

- (b) (i) Explain various issues in the design of code generator. (8)
(ii) Write note on Simple code generator. (8)