

**FACULTY OF ENGINEERING****B.E. 3/4 (IT) II – Semester (New) (Main) Examination, April / May 2013****Subject: Compiler Construction****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part – A and any five questions from Part – B.****PART – A (25 Marks)**

1. List the major data structures used in a compiler. (2)
2. What is the role of a lexical analyzer in a compiler? (2)
3. Write the regular definition for the language of C identifiers. (3)
4. Write the types of errors that occur in programming. (2)
5. Remove the left recursion from  $E \rightarrow E+n/n$  (2)
6. Define synthesized and inherited attributes. (3)
7. Draw DAG for the following expression (3)  
 $a + a*(b-c) + (b-c)*d$
8. What is short circuit code? (2)
9. Write the design goals of a garbage collector. (3)
10. List the techniques used for semantic preserving transformation. (3)

**PART – B (5x10 = 50 Marks)**

- 11.(a) Explain the translation process with a neat diagram. (5)  
 (b) Give a brief description about lex. (5)
- 12.(a) Compute FIRST and FOLLOW sets for the following grammar (5)  
 $S \rightarrow iEtSS'/a$   
 $S' \rightarrow eS/E$   
 $E \rightarrow b.$   
 (b) Write the algorithm for the construction of predictive parsing table. (5)
13. Explain the process of shift-reduce parsing on the i/p string  $id_1*id_2$  for the following grammar. (10)  
 $E \rightarrow E + T / T$   
 $T \rightarrow T * F / F$   
 $F \rightarrow (E) / id$
- 14.(a) Translate the assignment statement  $a[i]= b*c - b*d$  into quadruples and triples. (5)  
 (b) Using goto-avoiding translation scheme translate the expression (5)  
 $if(a == b \& \& c == d \& e == f) x = 1.$
- 15.(a) Discuss the issues in the design of a code generator. (5)  
 (b) Generate code for the following sequence assuming x,y,z are in memory locations. (5)  
 $if\ x < y\ go\ to\ L_1$   
 $z = 0$   
 $go\ to\ L_2$   
 $L_1 : z = 1$
- 16.(a) Explain the data-flow analysis framework. (5)  
 (b) Explain the design of absolute loader. (5)
17. Write short notes on: (4)  
 a) Parser generator YACC (4)  
 b) Conflicts in shift-reduce parsing. (3)  
 c) Rules for type checking. (3)