

FACULTY OF INFORMATICS**B.E. 3/4 (IT) II – Semester (Supplementary) Examination, January 2015****Subject: Compiler Construction****Time: 3 hours****Max. Marks: 75****Note: Answer all questions from Part - A. Answer any FIVE questions from Part - B.****PART – A (25 Marks)**

- 1 What is a compiler? Is it better to have two passes in compiler than having one pass. Why? 2
- 2 Consider the context free grammar 3
 $S \rightarrow SS + |SS^*|a$
 Show how the string $aa+a^*$ can be generated by this grammar and construct a parse tree for this string.
- 3 Why lexical and syntax analyzer are separated out? 2
- 4 What is an LL(1) grammar? Can you convert context free grammar into LL(1)? 3
- 5 What are the common conflicts that occur during shift reduce parsing? 3
- 6 What is a type checker? How does it work? 2
- 7 What is dependency graph? Give an example. 3
- 8 “Is very S-attributed definition is L-attributed definition” discuss. 2
- 9 What do you mean by machine dependent and machine independent optimization? 3
- 10 How to perform local optimization? 2

PART – B (5 x 10 = 50 Marks)

- 11 a) Draw the block diagram of phases of a compiler and indicate the main function of each phase. 5
 b) What are the basic functions of a language translator? 5
- 12 Construct the SLR parsing table for the given grammar. 10
 $E \rightarrow E + T | T$
 $T \rightarrow T * F | F$
 $F \rightarrow (E) | id$
- 13 a) What is DAG and construct syntax tree and DAG for the given expression? 6
 $a+a*(b-c)+(b-c)*d.$
 b) Write quadruple, triple, indirect triple for the statement $a^*(b+c).$ 4
- 14 What is a type expression? Explain the equivalence of type expression with an appropriate example. 10
- 15 What is code optimization? What are its advantages and give a detailed description on loop optimization techniques? 10
- 16 a) Explain the different issues in the design of code generator. 5
 b) Explain storage allocation strategies. 5
- 17 Write short notes on the following: 4 + 6
 a) Bootstrapping compilers b) Register allocation and assignment strategies
