Or

What are the various issues in the design of code generator ?

(b) What are basic block, flow graph and DAG ? Draw the DAG for the following expression

$a + a * (b + c) + (b + c) * d$ 8

2012

COMPILER DESIGN

Paper – 5.2

Full Marks – 80

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. (a) What is linker and loader ? 4

(b) What is compiler ? Describe the various phases of compiler and trace it with the program segment position ! = initial + rate * 60. 1+5=6

2. (a) Explain the Thompson's rule for conversion of regular expression to NFA 6

Or

What is Lex ? Differentiate between a lexeme, token and pattern. Give examples.

(b) Construct NFA that recognizes the regular expression

(aa) * (bb) * | a (aa) * b (bb) * 4

3. (a) Identify whether the following grammar is ambiguous or not.

G = { (S), {a, b}, {S → SaS, S → b}, S } 4

(b) Consider the following grammar

E → E+T | T

T → T * F | F

F → (E) | id

(i) Construct the predictive parsing table for this grammar. 6

(ii) Show the moves made by predictive parser on input id + id * id for the above grammar. 4

(c) Show that the following grammar 10

S → Aa | bAc | dc | bda

A → d

B → d

is LR (1) but not LALR

Or

What is Yacc ? Write Yacc specification for an advanced desk calculator.

4. (a) What is synthesized and inherited atribute ? What is annotated parse tree ? 2+2+2=6

(b) Write the syntax directed definition to produce three address code for booleans. 10

Or

Write translation scheme using a numerical representation for boolean.

(c) Write the syntax directed definition for a simple desk calculator and draw annotated parse tree for the input 8

6 * 4 + 5n

Or

What are Quadruples, Triples and Indirect triples ? Explain with example.

5. (a) Write the Code Generation algorithm. 4