CS-701

B.E. VII Semester

Examination, December 2014

Compiler Design

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt one question from each unit.
ii) All questions carry equal marks.

Unit I

1. a) Explain the various phases of compiler? How phases of compilation converts the statement
Position = initial + rate*60.

b) Briefly explain the compiler construction tools?

2. a) What are the issues in lexical analysis? Explain in detail the recognition of tokens.

b) Design FA to accept the following:

i) Identifiers ii) Constant

Unit - II

3. a) Explain handle pruning. Explain the same for the grammar E --> E + E / E * E / (E) / id and input string id l + id2 * id3.

b) Describe the conflicts that may occur during shift reduce parsing.

4. a) Check whether the given grammar is LL(1) or not

S —>iEt SS' /a

S' —>eS / E

E —> b

b) What is syntax directed translation? Why are they important?

Unit - III

5. a) Discuss the symbol table organisation, also give the difference between binary tree and hashing organisation of symbol table.

b) Explain the various parameter parsing mechanism.

6. a) Explain the specification of simple type checker?

b) What is polymorphic functions?

c) How type checking and type conversion is implemented in compiler.

Unit - IV

7. a) Construct DAG for the following expression. a + a * (b - c) + (b- c) * d

b) How CPU registers are allocated while creating machine code.

8. a) Write quadruples from the expression: (a + b) * (c + d) — (a + b + c)

b) Discuss the issues in design of code generator.

Unit - V

9 a) What is global data analysis? What is its use in code optimization?

b) Explain the following with example:

i) Strength reduction

ii) Variable propagation

iii) Common sub expression elimination

10. a) Explain loop optimization with example. b) Define the following

i) Dominators ii) Natural loops

iii) Inner loop iv) Preheader