R15

Code: 15A05601

B.Tech III Year II Semester (R15) Regular Examinations May/June 2018
COMPILER DESIGN
(Common to CSE & IT)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
*****

1   Answer the following: (10 X 02 = 20 Marks)
   (a)   What is the role of input buffering in lexical analyzer?
   (b)   Write a regular expression for a constant.
   (c)   What is ambiguous grammar? Give an example.
   (d)   Write a code segment for parser generator to generate a parse tree of an expression.
   (e)   Write syntax directed translation scheme for infix to postfix conversion.
   (f)   What is L-attributed definition?
   (g)   What are the operations required on a symbol table?
   (h)   What is the use of stack memory?
   (i)   What is basic block?
   (j)   Why loop optimization is so important than other code optimization?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   (a)   Show the sequence output of each phase of a compiler for the following code segment:
             int x = 5, y = 10,z; z = x+ y*5; printf("%d", z);5.
    (b)   Write a LEX program for a C programming language.
OR
3   (a)   Explain about state minimization of finite automata.
    (b)   Construct NFA and find DFA for a pattern recognition of (a/b)*abb.

UNIT – II

4   Construct CLR parsing for the following grammar:
             S→ CC
             C→ cC/d
OR
5   (a)   What is unambiguous grammar? Give an example for ambiguous grammar.
    (b)   Write a code for parser generator of an assignment and if-then-else statement.

UNIT – III

6   (a)   What is meant by back patching? Show back patching in a Boolean expression.
    (b)   Discuss various types of three address code representation for the following code segments:
             x = x+y*10; z = x;
OR
7   Write SDT to generate intermediate code for assignment statement. Give an example.

UNIT – IV

8   (a)   Describe about symbol table organization for block structured language.
    (b)   Explain how to allocate heap memory space for dynamic memory allocation.
OR
9   (a)   Describe about various representations of symbol table.
    (b)   What is activation record? Explain the structure of an activation record.

UNIT – V

10 (a)   What is direct acyclic graph? Explain how this is useful for dataflow analysis.
    (b)   Describe the following: (i) Common sub expression.   (ii) Induction variable elimination.
OR
11   Describe about various peephole techniques with examples.