

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.
