

BT-6/M-20

36113

COMPILER DESIGN

Paper–CSE-302N

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. (a) Explain the various compiler construction tools in brief.
7½
- (b) How can you convert a regular expression to NFA?
Explain using suitable examples. 7½
2. (a) Describe the language denoted by the following regular expression :
 - (i) $0(0 \mid 1)^*0$.
 - (ii) $((s \mid 0) \mid *)^*$.
 - (iii) $(0 \mid 1)^*0(0 \mid 1)(0 \mid 1)$. 7½
- (b) Explain the working of a Lexical Analyzer using a small example. 7½

UNIT–II

3. (a) Differentiate between lexical and syntactic analysis. How can you eliminate ambiguity during lexical analysis?
Explain using suitable examples. 7½

(b) What is top-down parsing? Write and explain the steps to parse $\text{id} + \text{id} * \text{id}$ using top-down parsing. $7\frac{1}{2}$

4. (a) Construct a recursive decent parser starting with the following grammar :

$S \rightarrow + SS \mid - SS \mid a.$ $7\frac{1}{2}$

(b) What is canonical LR parser? Explain using suitable examples. $7\frac{1}{2}$

UNIT-III

5. (a) How intermediate code is generated for declarative statement? Explain using suitable examples. $7\frac{1}{2}$

(b) What is meant by backpatching for Boolean expressions? Explain using suitable examples. $7\frac{1}{2}$

6. Design and explain a target machine model using suitable examples. 15

UNIT-IV

7. Explain the procedure for optimization of basic blocks in detail using suitable examples. 15

8. (a) What are the various source language issues? Explain using suitable examples. $7\frac{1}{2}$

(b) Write short note on Heap Storage Management. $7\frac{1}{2}$
