

IT-302 COMPILER DESIGN

Time: 1:30 Hours

Max. Marks : 20

Note: Answer all questions
Assume suitable missing data if any

1. Describe the different phases of a compiler with a flowchart. (5)
2. Construct a non-deterministic finite automaton for the regular expression $r.e. = (0^*1 + 01^*)^*$ for $\Sigma = \{0,1\}$ using Thompson construction, describing each step in detail. (5)
3. a) Fill in the LL(1) parsing table for the following grammar
 $S \rightarrow BYX$
 $B \rightarrow b | \epsilon$
 $Y \rightarrow aY | \epsilon$
 $X \rightarrow a$
Given $\Sigma = \{a,b\}$ and \$ is the right end marker of each string.

b) Summarize the FIRST and FOLLOW sets for each of the non-terminals of this grammar, for example FIRST (S)=... (4+2)
4. a) What is the role of the Lookahead code with sentinels in lexical analysis and where exactly are the sentinels placed?
b) Tokenize a sample IF-ELSE statement written in C. (2+2)