

# First Term Examination, February-2019

B.Tech. (VI sem) CSE/IT

Paper Code : ETCS-302

Subject: Compiler Design

Time : 1.5 hours

Max. Marks:30

Note: Attempt Q. No. 1 which is compulsory and any two other questions from remaining questions. Each question carries 10 marks.

Q.1 a) How dependency graph effects the evaluation order in syntax directed translation?

b) "Lexical Analysis is the most time consuming phase in compilation" justify this statement.

c) Create NDFA for the regular expression  $(a+b)^*abb+bba$ .

d) Differentiate between L-Attributed definition and S-Attributed definition.

e) Remove left recursion from the following grammar:  $S \rightarrow AaAb | b$   $A \rightarrow Ab | a | ab$  [2\*5=10]

Q.2. Prove that following grammar is CLR(1) but not LALR(1)

$S \rightarrow Aa | bAc | Bc | bBa$

$A \rightarrow d$

$B \rightarrow d$

[10]

Q.3.

(a) Calculate first and follow for all non-terminals for the following grammar.

$E \rightarrow E+T | T$

$T \rightarrow TF | F$

$F \rightarrow F^* | a | b$

[6]

(b) Create a predictive parsing table for the grammar shown in part a.

[4]

Q.4.

(a) How lex(flex) tool can be used to create lexical analyzer? Explain with the help of an example.

[5]

(b) Define Synthesized and inherited attributes. Identify Synthesized and inherited attributes from the grammar given below:

$D \rightarrow TL$   $L.in = T.type; L.x = T.y$

$L \rightarrow L_1, id$   $L_1.in = L.in; L.x = L_1.x$

$T \rightarrow id$

Justify your answer.

[5]