

24488

**B. Tech. 7th Semester (CSE) F-Scheme
Examination, December-2017
COMPILER DESIGN
Paper-CSE-405-F**

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt five questions selecting one question from each section and Question No. 1 is compulsory.

1. Describe the following : 20
- (i) Input buffering
 - (ii) Parsing
 - (iii) Syntax directed definitions
 - (iv) Role of Parser.

Section-A

2. (i) What is Compiler ? Explain the different phases of Compiler in detail. 12
- (ii) Explain various compiler construction tools. 8
3. (i) Construct the transition diagram for the following regular expressions 10
- (a) $(a/b)^*abb(a/b)^*$
 - (b) $(a/b)/(ab)^*b/a^*(bb)^*$
- (ii) How do we implement lexical analyzer ? Explain with example. 10

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Section-B

4. (i) Explain Chomsky hierarchy of grammars. 10
 (ii) What is context free grammar? Give the left most and right most derivation for the following grammar. Also draw its derivation tree for it and check its ambiguity for $id + id + id$:

$$E \rightarrow E + E \mid E - E \mid E * E \mid E / E \mid id \quad 10$$

5. (i) Test whether the grammar is LL(1) or not and construct a predictive parsing table for it. 10

$$S \rightarrow AaAb \mid BaBa, A \rightarrow e, B \rightarrow e$$

- (ii) Consider the following grammar:

$$S \rightarrow ABC, A \rightarrow Aa \mid d, B \rightarrow Bb \mid e, C \rightarrow Ce \mid f$$

Eliminate left recursion from the above grammar. 10

Section-C

6. Check whether the following grammar is LR (0) or not. 20

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (E) \mid id$$

7. (i) State and explain the syntax directed translation scheme for the desk calculator and give the parse tree and translation for the string

$$(7 + 4) * 249 / 3 + 26. \quad 10$$

- (ii) What is intermediate code representation? Explain quadruple, triples and indirect triples with the help of an example. 10

Section-D

8. (i) Explain the various types of errors generated during the various phases of the compiler. How do we recover from these errors? 10
 (ii) What is the use of Symbol Table? Explain any two data structures associated with Symbol Table. 10

9. Write short notes on the following:

- (a) Loop optimization
 (b) Code generation. 20