

Roll No. ....

**24488**

**B.Tech. 7th Semester  
(Computer Science Engineering)  
Examination – December, 2012**

**COMPILER DESIGN**

**Paper : CSE-405-F**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

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

1. (a) Differentiate compiler and interpreter.  $2 \times 10$   
(b) Differentiate pass & phase.  
(c) Define lexeme, token pattern.  
(d) What do you mean by ambiguous grammar ?  
(e) Differentiate top down & bottom-up parser.  
(f) Differentiate parse tree and syntax tree.

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P. T. O.

- (g) Define operator grammar.
- (h) Define semantic errors.
- (i) Define handle & handle pruning.
- (j) Remove left recursion  $S \rightarrow Aa/b$ .  $A \rightarrow Ac/Sd/e$

### SECTION – A

- 2. (a) What is the need of translators ? Differentiate single and multipass compiler. 10
- (b) Briefly explain the structure of a compiler. 10
- 3. (a) Design a DFA over an alphabet  $\Sigma = (a,b)$  that accepts all the strings ending with ab. 5
- (b) Write a LEX program specification for the token defined as. 5

Token	Integer code	Value
begin	1	
end	2	
if	3	
Identifier	4	Pointer to symbol table
<	5	1
<=	5	2
<>	5	3

- (c) Describe the steps for scanner construction. 10

### SECTION – B

4. (a) Explain capabilities of CFG. 5

- (b) Construct a CFG for the language. 5

$$L = \{WCW^r / W \in (a/b)^* \text{ \& } W^r \text{ stands for } w \text{ reversed}\}$$

- (c) Explain & remove the ambiguity from following CFG. 10

$$E \rightarrow E+E/E^* E/id$$

5. (a) Check whether following grammar is OPG (Operator Precedence Grammar) 5

$$E \rightarrow E+T/T$$

$$E \rightarrow T+F/F$$

$$E \rightarrow (E)/id$$

- (b) Consider the following grammar. 15

$$E \rightarrow TE'$$

$$E' \rightarrow +E/E$$

$$T \rightarrow FT'$$

$$T' \rightarrow T/E$$

$$F \rightarrow PF'$$

$$F' \rightarrow *F'/E$$

$$F' \rightarrow (E)/a/b/\epsilon$$

Check whether the grammar is LL(1) or not ?

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