

**RE-24488**

**B. Tech. 7th Semester (CSE) Examination,**

**December-2012**

**COMPILER DESIGN**

**Paper-CSE-405-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

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

1. (a) Differentiate Operator grammar and operator precedence grammar.  
(b) Compare Pass and phase.  
(c) Differentiate Lexeme, token and pattern.  
(d) Compare Single pass and multipass compiler  
(e) Differentiate Top down and bottom-up parser.  
(f) Compare Parse tree and syntax tree.  
(g) Remove left recursion  $S \rightarrow Aa/b, \rightarrow Ac/Sd/e$   
(h) What do you mean by DAG ? What is its application ?  
(i) Error recovery in LL(1) grammar. 20

**Section-A**

2. (a) What is a translator ? Explain its types. What are the characteristics of a good translator ? 10  
(b) Briefly explain cross compilation. 10

**RE-24488-P-4-Q-9**

**[P.T.O.]**

[download all btech stuff from studentsuvidha.com](http://studentsuvidha.com)

3. (a) What is a LEX ? Discuss its role in compiler design. 10
- (b) Write a LEX program specification for the token defined as 10

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

**Section-B**

4. (a) Explain Chomsky hierarchy. 10
- (b) Explain and remove the ambiguity from following CFG 10

$E \rightarrow E + E / E - E / E (E) / -E / E * E / id.$

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

$E \rightarrow E + T / T$

$E \rightarrow T + F / F$

$F \rightarrow (E) / id$

( 3 )

**RE-24488**

(b) Consider the following Grammar.

15

$$E \rightarrow TE'$$

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

$$T \rightarrow FT'$$

$$T' \rightarrow T/E$$

$$F \rightarrow PF'$$

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

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

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

### Section-C

6. Check whether the grammar is SLR(1) or not.

20

$$S \rightarrow L=R$$

$$S \rightarrow R$$

$$L \rightarrow *R$$

$$L \rightarrow id$$

$$R \rightarrow L$$

7. State and explain the syntax directed translation scheme for the desk calculator and give the parse tree and translation for the string  $(7+4) * 249/3 + 26$ .

20

**RE-24488**

[P.T.O.]

[download all btech stuff from studentsuvidha.com](http://studentsuvidha.com)

**Section-D**

8. (a) What is the context of symbol table ? Give justification for each. 10
- (b) How symbol table space can be reused. Give some example. 10
9. Write short note on : 20
- (a) Peephole optimization
  - (b) Explain register allocation and assignment
  - (c) Code generation
  - (d) Sources of errors.