Roll No. .....

24488

B. Tech 7th Sem. (CSE) Examination – May, 2018

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

1. Write a short note on the following : 20

(a) Differentiate top-down & bottom-up parser.

(b) Remove left recursion S→Aa/b, A→Ac/Sd/e.

(c) What is translator ? Differentiate between compiler & interpreter.

(d) What is parsing ? Explain derivation & parse tree.

(e) What is regular expression ? How it is useful in compile design ?

SECTION – A

2. (i) What is Compiler ? Explain the structure of Compiler in detail. 14

(ii) Why do we need translator ? Explain. 6

3. (i) How do we implement lexical analyzer ? Explain with example. 10

(ii) Construct the NFA for the following regular expression : 10

R= (a | b)*abb

SECTION – B

4. (i) Explain role of parser in detail. 10

(ii) Explain and remove the ambiguity from following CFG. 10

E→E+E | E-E | E\E | E*E | (E) | -E | id

5. (a) Explain shift-reduce parsing with the help of an example. 10

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

$S \rightarrow iCtSS' \mid a$

$S' \rightarrow eS \mid \varepsilon$

$C \rightarrow b$

SECTION – C

6. (i) Check whether the following grammar is LR (1) or not ? 10

$S \rightarrow CC$

$C \rightarrow cC \mid b$

(ii) Construct the LR(0) parsing table for the following grammar. 10

$S \rightarrow L=R$

$S \rightarrow R$

$L \rightarrow * R$

$L \rightarrow id$

$R \rightarrow L$

Check whether this above grammar is LR (0) grammar is not.

7. (i) Convert the following statements into the Quadruple, Triple and Indirect triple representation : $A = -B * (C + D)$ 10

(ii) How syntax directed translation scheme is implemented ? Explain with example. 10

SECTION – D

8. What is Symbol Table ? Explain in detail about its contents and data structure. 20

9. Write short note on the following : 20

   (a) Basic blocks & flow graph

   (b) Peephole optimization

   (c) DAG

   (d) Loop Unrolling & Loop Jamming