

(Following Paper ID and Roll No. to be filled in your
Answer Books)

Paper ID : 214410

Roll No.

--	--	--	--	--	--	--	--	--	--

M.C.A.

Theory Examination (Semester-IV) 2015-16

COMPILER DESIGN

Time : 3 Hours

Max. Marks : 100

Note : Attempt questions from all Sections as per directions.

Section-A

1. Attempt all parts of this section. Answer in brief. (2×10 = 20)

- (a) What are the two parts of a compilation? Explain briefly.
- (b) List the phases that constitute the front end of a compiler.
- (c) Differentiate tokens, patterns, and lexeme.
- (d) Mention the various notational shorthand's for representing regular expressions.

- (e) Why lexical and syntax analyzers are separated out?
- (f) Write the algorithm for FIRST and FOLLOW.
- (g) Palindromes can't be recognized by any FSA why?
- (h) What are kernel & non-kernel items?
- (i) What is phrase level error recovery?
- (j) List the advantages and disadvantages of operator precedence parsing.

2. Attempt any five questions from this section.

(10×5 = 50)

- (a) What is the difference between S-attributed and L-attributed definitions?
- (b) What is code motion? Also state the properties of optimizing compiler.
- (c) Differentiate between top down and bottom up parser. Under which conditions predictive parsing can be constructed for a grammar?

- (d) What are the various methods of implementing three address statements? What are the problems with top down parsing?
- (e) Write the procedure to generate $a*(b+c)/(d+e)$ TAC.
- (f) Give the syntax-directed definition for if-else statement.
- (g) Eliminate left recursion and left factor the following grammar. $E \rightarrow aba|abba|Eb|EbE$
- (h) Eliminate left recursion in more than one level.

$S \rightarrow Aa|b$

$A \rightarrow Ac|Sd|\epsilon$

Section-C

UPTU NOTES

Attempt any two questions from this section. (15×2 = 30)

- 3. Explain how the scope rules and the block structure of a programming language decide the structure of the symbol table? Construct the SLR parsing table for the following grammar:

$E \rightarrow E + T$

$E \rightarrow T$

$T \rightarrow T * F$

(3)

P.T.O.

T->F

F-> id

L->L,E / E

4. What is the objective of intermediate code generation?
What is the different form of intermediate code generated by intermediate code generation phase?

Generate the three-address code for the following code segment:

```
Main ( )  
{ int a = 1; int b[ 10];  
  while (a<= 10)  
    b[a] = 2 ** a; }
```

5. Find the canonical collection of sets of LR (1) items:

S->AaAb

A->BbBa

A-> ϵ B-> ϵ

(4)

P.T.O.