## **Printed Pages: 4**

### CA410/NMCAE-011/MCAE11

## (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.

 $(2 \times 10 = 20)$ 

- (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.

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- (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.

Section-B

# 2. Attempt any five questions from this section.

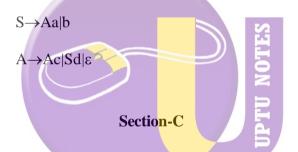
(a) What is the difference between S-attributed and L-attributed definitions?

 $(10 \times 5 = 50)$ 

- (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?

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- (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→aba|abba|Eb|EbE
- (h) Eliminate left recursion in more than one level.



Attempt any two questions from this section.

 $(15 \times 2 = 30)$ 

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:

$$E->E+T$$

E->T

$$T->T * F$$

P.T.O.

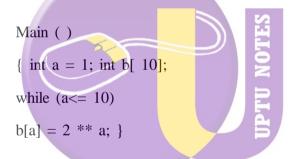
T->F

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:



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

S->AaAb

A->BbBa

 $A \rightarrow \epsilon B \rightarrow \epsilon$