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VI-SEMESTER
END SEMESTER EXAMINATION

Roll No.....

B.Tech.(CO)
May- 2018

Time: 3:00 Hours

CO-302 Compiler Design

Max. Marks: 40

Note: Attempt any five questions

Q.No. 1

A. How LALR is different from CLR? Construct LALR (1) parsing table for the following grammar: [6]

 $S \rightarrow AA$ $A \rightarrow aA / b$

B. Eliminate Left recursion from following grammar [2]

 $S \rightarrow aBDh$ $B \rightarrow Bb \mid c$ $D \rightarrow EF$ $E \rightarrow g \mid \epsilon$ $F \rightarrow f \mid \epsilon$

Q.No. 2

A. Compute FIRST and FOLLOW sets for the following grammar

 $D \rightarrow T L;$ $L \rightarrow id M;$ $M \rightarrow id M / \epsilon$ $T \rightarrow int / float$

(where 'e' denotes epsilon)

[4]

B. Design a DFA with input alphabet $\{a,b\}$ for the language [2x2=4]

i) $L = \{w \in (a,b)^* : n_b(w) \bmod 3 > 1\}$

Where $n_b(w)$ is number of b's in w

ii) $L = \{ab^5 w b^4 : w \in (a,b)^*\}$

Q.No. 3

Write the S-attributed SDD for implementation of an assignment statement and show the stack implementation for $x := a * b + c$ with $a=5$, $b=6$ and $c=2$. [8]

Q.No. 4

A. Translate the following expression into three address instructions

$a := -b * (c + d)$

Also give quadruple and triple representation of the same? [4]

B. Write S-attributed definition for constructing a syntax tree for an assignment statement and Write down the structure of a typical activation record. [4]

Q.No. 5

A. Write SDD for generating three address code for Boolean expressions with $\&\&$, $!$ (OR) and $!$ Operators. [4]

B. What is LEX? How it is different from YACC tool. [4]

Q.No. 6

A. Explain the mid-square method and folding method used for generating hash values. [4]

B. Differentiate between common sub-expression elimination and dead code elimination with example and also discuss elimination of local common subexpression [4]

Q.No. 7

A. Explain error recovery strategies adopted by compiler. [4]

B. Enlist the problems with the following grammar

$E \rightarrow E + E$, $E \rightarrow E * E$, $E \rightarrow id$

Also rectify them to make it suitable for LL (1) parsing? [4]