Sixth SEMESTER   **B.Tech [IT]**

Supplementary EXAMINATION   *Sep-2019*

IT-302 COMPILER DESIGN

Time: 3:00 Hours   *Max. Marks : 40*

Note : Answer any four questions out of five
       Assume suitable missing data, if any.

Q.1 [a] Eliminate dead code from the following segment of code:

$$a=y+2$$
$$z=x+w$$
$$x=y+2$$
$$z=p+q$$

[b] Store the optimized code obtained in part [a] in Quadruple and Triple storage structures

(5+5)

Q2 [a] Construct a shift-reduce parser for the grammar productions: S→E*A, A→B, E→B-C, B→num, C→num for a suitable test string of your choice.

[b] Demonstrate the use of Thompson construction algorithm for constructing an NFA for the regular expression: **(aa(ba)*+(b+a)*)***

(5+5)

Q.3 a) Explain the data structures for symbol tables and explain the scope information.

a) Distinguish static and dynamic storage allocation.

(5+5)

Q.4 Given the grammar S→E*A, A→B, E→B-C, B→num, C→num construct the Syntax Directed Definition (SDD) and the annotated parse tree for any one input string that is accepted. Compute the attribute .value (for instance S.value) for each node of this tree bottom-up. Construct the Directed Acyclic Graph (DAG) for this string.

(10)

Q.5 Explain with examples of each
   a) Lexical errors versus semantic errors
   b) SLR Parsing tables

(5+5)