

VI-SEMESTER  
END SEMESTER EXAMINATIONB.Tech.(SE)  
May- 2019

## SE-312 Compiler Design

Time: 3:00 Hours

Max. Marks: 70

Note: Attempt any five questions

Q.No. 1

- A. Compute FIRST & FOLLOW for the following augmented grammar construct SLR(1) parsing table [7]

 $S \rightarrow E$  $E \rightarrow E + T \mid T$  $T \rightarrow T * F \mid F$  $F \rightarrow \text{id}$  Where E is the start symbol

- B. Compare LALR with CLR and Construct LALR (1) parsing table for the following grammar: [7]

 $S \rightarrow XX$  $X \rightarrow aX$  $X \rightarrow b$ 

Q.No. 2

- A. What are the different types of parsing? Enlist the problems with the following grammar and rectify them to make it suitable for LL (1) parsing [7]

 $E \rightarrow E + E, E \rightarrow E * E, E \rightarrow \text{id}$ 

- B. Construct Predictive parsing table for the following grammar, where S is start symbol

 $S \rightarrow iAtSS_1 \mid a$  $S_1 \rightarrow eS \mid \epsilon, E \rightarrow b \quad \{ \text{Where } \epsilon \text{ is null.} \}$  [7]

Q.No. 3

- A. 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  $c=2$ . [7]

B. Write S-attributed definition for constructing a syntax tree for an assignment statement. [7]

Q.No. 4

A. Translate the following expression into three address instructions

$$x = (a+b) * (-c) / (c+d)$$

Also give quadruple and triple representation of the same? [7]

B. Explain ambiguous grammar with example and eliminate Left recursion from following grammar [7]

$$S \rightarrow aBDh$$

$$B \rightarrow Bb \mid c$$

$$D \rightarrow EF$$

$$E \rightarrow g \mid \epsilon$$

$$F \rightarrow f \mid \epsilon$$

Q.No. 5

A. Write SDD for generating three address code for Boolean expressions with &&, ! (OR) and ! Operators. [7]

B. What is Cross Compiler? Differentiate LEX and YACC tool with suitable example. [7]

Q.No. 6

A. Explain the midsquare method and folding method used for generating hash values. [7]

B. What are different optimization techniques for loop explain with suitable examples. [7]

Q.No. 7

A. Explain error recovery strategies adopted by compiler. [7]

B. Find three address code of following switch statement [7]

```
switch(i+j) {  
  case 1: x=y+z  
  default: p=q+r  
  case 2: u=v+w  
}
```