

Total No. of Questions : 5]

SEAT No. :

**PD514**

[Total No. of Pages : 2

[6468]-66

**T.Y. B.Sc. (Computer Science)**

**CS-366 : COMPILER CONSTRUCTION**

**(Revised 2019 Pattern) (CBCS) (Semester - VI)**

*Time : 2 Hours]*

*[Max. Marks : 35*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicates full marks.*

**Q1)** Attempt any eight of the following. (out of 10)

**[8×1=8]**

- a) Define cross compiler.
- b) What are classes of SDD?
- c) State the need of augmented grammar.
- d) List the phases of compiler in sequence.
- e) Construct LR(0) item for  $A \rightarrow \epsilon$ .
- f) Give advantages of boot strapping.
- g) State True or False. Number of states in SLR parser and LR(1) parser are same.
- h) What is the use of DAG. (Directed Acyclic Graph).
- i) Define the term dependency Graph.
- j) Define dead code

**Q2)** Attempt any four of the following. (out of 5)

**[4×2=8]**

- a) Write any four functions of Lexical analyzer.
- b) Write two difference between top-down parser and bottom-up parser.
- c) Find regular expression for Hexa decimal number accepted in C language.
- d) Compute first and follow for following grammar.  
 $S \rightarrow a AB|bA$   
 $A \rightarrow aAb|\epsilon$   
 $B \rightarrow bB|c$
- e) Eliminate the left Recursion from given grammar.  
 $S \rightarrow a BAab|aBb$   
 $A \rightarrow Aa|b$   
 $B \rightarrow bB|b$

**P.T.O.**

**Q3)** Attempt any two of the following. (out of 3)

[2×4=8]

- a) Write RDP parser for the following grammar.  
 $A \rightarrow 0A0|A1|AA|1$
- b) Construct Annotated parse Tree for input string  $5 + 3 * 4$  by using following grammar rules :

Production	Semantic Rules
$L \rightarrow E$	$L.val = E.val$
$E \rightarrow E_1 + T$	$E.val = E_1.val + T.val$
$E \rightarrow T$	$E.val = T.val$
$T \rightarrow T_1 * F$	$T.val = T_1.val * F.val$
$T \rightarrow F$	$T.val = F.val$
$F \rightarrow (E)$	$F.val = E.val$
$F \rightarrow \text{digit}$	$F.val = \text{digit.lexval}$

- c) Check whether the given grammar is LL(1) or not?

$S \rightarrow iEtSS'|a$   
 $S' \rightarrow eS|\epsilon$   
 $E \rightarrow b$

**Q4)** Attempt any two of the following. (out of 3)

[2×4=8]

- a) Check whether the given grammar is SLR(1) or not.

$S \rightarrow A|B$   
 $A \rightarrow aA|b$   
 $B \rightarrow dB|b$

- b) Consider the following operator grammar.

$S \rightarrow S + S | S * S | id$

Create operator precedence table and draw precedence function graph.

- c) Consider the expression  $a = b * (-C) + b * (-C)$  give Triple representation and Quadruple representation.

**Q5)** Attempt any one of the following. (out of 2)

[1×3=3]

- a) Write a lex program to count total number of vowels and total number of consonants from the input stream.

- b) Define DAG. Construct DAG for following Basic block.

$a = b + c$   
 $b = b - c$   
 $c = c + d$   
 $x = b + c$

