

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  $A \rightarrow \in$ .
- 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.

$S \rightarrow aAB|bA$

$A \rightarrow aAb|\in$

$B \rightarrow bB|c$

- e) Eliminate the left Recursion from given grammar.

$S \rightarrow aBAab|aBb$

$A \rightarrow Aa|b$

$B \rightarrow bB|b$

**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
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$$L \rightarrow E \quad L.val = E.val$$

$$E \rightarrow E_1 + T \quad E.val = E_1.val + T.val$$

$$E \rightarrow T \quad E.val = T.val$$

$$T \rightarrow T_1 * F \quad T.val = T_1.val * F.val$$

$$T \rightarrow F \quad T.val = F.val$$

$$F \rightarrow (E) \quad F.val = E.val$$

$$F \rightarrow \text{digit} \quad F.val = \text{digit.lexval}$$

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

$$S \rightarrow iEtSS'|a$$

$$S' \rightarrow eS|\in$$

$$E \rightarrow b$$

**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 Quadruplet 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.

$$a = b + c$$

$$b = b - c$$

$$c = c + d$$

$$x = b + c$$

