

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7159

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Unique Paper Code : 6333490010

Name of the Paper : ADVANCED COMPILER DESIGN

Name of the Course : B.VOC WEB DESIGNING

Semester : VIII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question No. 1 is compulsory in Section-A.
3. Attempt any four questions from Section-B.
4. Parts of a question should be attempted together.

Section A

- Q1. (a) What is Left Recursion? Why is it problematic for Top-Down parsers? 3
- (b) Construct a Syntax Tree for the expression: $a * b + c * d$ 3
- (c) Define a sentinel. How is it used in lexical analysis buffers to optimize input reading? 3
- (d) What are Tokens, Patterns, and Lexemes? Give an example. 3
- (e) Differences between compiler and Interpreter. 3
- (f) Define Regular Expressions and Regular Grammar. 3
- (g) List the various error recovery strategies for a lexical analysis. 3
- (h) Define a viable prefix. State its significance in bottom-up parsing. 3
- (i) Explain the following terms a) Ambiguous Grammar b) Lexemes 3
- (j) Differences between SLR, CLR, LALR parsers. 3

Section B

- Q2. (a) Explain Compiler with its all phases? 8
- (b) Construct the transition diagram for the following 7
- A) $(ab^*)^*$

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- B) $((a|b)c^*)^*$
 C) $(a|b)^*abb$
- Q3. (a) Construct LALR parsing table for given grammar 8
 $S \rightarrow aa$
 $A \rightarrow aA$
 $A \rightarrow b$
- (b) Define quadruple, Triple, Indirect Triple? Write 3 address code, Quadruple, Triple and indirect triple for expression: 7
 $-(a+b)*((-d)*e)$
- Q4. (a) Construct SLR parsing table for following Grammar 8
 $S \rightarrow E$
 $E \rightarrow E+T/T$
 $T \rightarrow T*F/F$
 $F \rightarrow id$
- (b) Construct the FIRST and FOLLOW sets for the following grammar: 7
 $S \rightarrow A$
 $A \rightarrow aB \mid \epsilon$
 $B \rightarrow bC$
 $C \rightarrow c \mid \epsilon$
- Q5. (a) Given the following grammar: 8
 $A \rightarrow A d \mid A e \mid b d \mid b c$
 i) Show that the grammar contains left recursion and eliminate it.
 ii) After removing left recursion, perform left factoring.
- (b) Perform Shift Reduce Parsing for the following 7
 i) $S \rightarrow (L)a$ $L \rightarrow L, S|S$ input string- $(a,(a,a))$
 ii) $E \rightarrow E+E / E*E / (E) / id$ input string- $(id*id+id)$
- Q6. (a) Define Symbol table. Explain different types of Data structure for symbol table 8
 (b) Draw the format of Activation Record in stack allocation and explain each field in it. 7
- Q7. (a) Describe the various strategies in register allocation. 8
 (b) Construct the DAG for the following statement. 7
 $a+b*c+d+b*c$