

Dec 13 (KUK)

Roll No. Total Pages : 03

BT-7/D-13 8701

COMPILER DESIGN

CSE-401

Time : Three Hours] [Maximum Marks : 100

Note : Attempt any Five questions. All questions carry equal marks.

1. (a) Eliminate the left recursion for the following grammar : 7

(b) $S \rightarrow a \mid \wedge \mid (T)$ Write an algorithm for

(c) Show that the following grammar is LR(1) :

$S \rightarrow Aa \mid bAc \mid Bc \mid bBa$

$A \rightarrow d$

$B \rightarrow d$ 7

(d) Make a comparative analysis between SLR parser, LALR parser and CLR parser. 6

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2. (a) Consider the grammar : **10**
- $$E \rightarrow E + T \mid T$$
- $$T \rightarrow TF/F$$
- $$F \rightarrow F^*|a|b$$
- Construct the SLR parsing Table for this grammar. Also parse the input string $a^*b + a$.
- (b) Consider the following grammar :
- $$E \rightarrow E + T,$$
- $$T \rightarrow T * F$$
- $$E \rightarrow T,$$
- $$T \rightarrow F$$
- $$F \rightarrow (E),$$
- $$F \rightarrow id$$
- List all the LR(0) items for the grammar. **10**
3. (a) Differentiate between Parse tree and Syntax tree. **4**
- (b) Draw Syntax tree for the following arithmetic expression $(a * (b + c) - d) / 2$. Also write given expression in Postfix Form. **8**
- (c) Write quadruples, triples and indirect triples for the expression : **8**
- $$-(a + b) * (c + d) - (a + b + c).$$
4. (a) How is Scope information represented in Symbol Table ? **10**
- (b) Explain various data structures for Symbol Tables. **10**
5. (a) Explain the implementation of Block Structured Languages. **10**
- (b) Explain various storage allocation strategies in brief. **10**
6. (a) Explain Error Recovery in Operator Precedence Parsing. **10**
- (b) Explain Minimum Distance Correction of Syntactic Errors. **10**
7. (a) What are DAG's ? Write an algorithm for constructing DAG. **10**
- (b) What are various applications of DAG's ? **10**
8. (a) Explain Peephole Optimization in detail. **10**
- (b) What do you know about object program ? Discuss it and also explain various problems in Code Generation. **10**