

**ST.ANN'S COLLEGE OF ENGINEERING AND TECHNOLOGY :: CHIRALA**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**FREQUENTLY ASKED QUESTIONS**

ACADEMIC YEAR: **2017-18**

YEAR/SEMESTER: **III-I Sem. –'A'&'C'**

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SUBJECT: **COMPILER DESIGN**

**UNIT-I**

1. What is a Compiler? What are the differences between Compiler & Interpreter?
2. Differentiate compiler and interpreter.
3. Explain in detail about Language Processing System?
4. What are various Phases of a Compiler? Explain each phase for the following statement:  
**position: = initial + rate \* 60**
5. Write a regular expression for identifiers and reserved words. Design the transition diagrams for them.

**UNIT-II**

1. Construct LMD, RMD, Parse Tree for deriving the strings  
(i) (a,a)                      (ii) (a,(a,a))      (iii) ((a,a),(a,a))  
from the following CFG:  
**S -> (L) / id**  
**L -> L,S / S**
2. Give the classification of parsing techniques and briefly explain each.
3. Explain Top down parsing with an example? Compute First() and Follow() for the following CFG:  
**E -> TE'**  
**E' -> +TE' / €**  
**T -> FT'**  
**T' -> \*FT' / €**  
**F -> (E) / id**
4. Check whether the following grammar is LL (1) or not:  
**S -> AaAb / BaBb**  
**A -> €**  
**B -> €**
5. a) Show that the grammar  $S \rightarrow 0S1 \mid SS \mid \epsilon$  is ambiguous.  
b) What are the limitations of recursive descent parser?

### UNIT-III

1. Implement Shift Reduce Parsing for the following CFG:  
 $E \rightarrow E+T / T$   
 $T \rightarrow T * F / F$   
 $F \rightarrow (E) / id$
2. Construct SLR Parsing Table for the following CFG:  
 $S \rightarrow CC$   
 $C \rightarrow cC / d$
3. Write the steps for the efficient construction of LALR parsing table. Explain with an example.
4. Construct CALR Parsing Table for the following CFG:  
 $S \rightarrow L=R / R$   
 $L \rightarrow *R / id$   
 $R \rightarrow L$
5. Explain the compaction of LR parsing tables with an example.

### UNIT-IV

1. Construct SDT for a Simple Desk Calculator Program?
2. Draw Annotated Parse Tree for deriving the following sentence:  
**int id1, id2, id3**  
from the following CFG:  
 $D \rightarrow TL$   
 $T \rightarrow int / real$   
 $L \rightarrow L, id / id$
3. Write the quadruple, triple, indirect triple for the expression  $-(a*b) + (c+d)-(a+b+c+d)$
4. Write the Quadruple, Triple & Indirect Triple Representation of the following expression:  $a + a*(b-c) + (b-c)*d$
5. Define Type Checker. Write down the specification of a simple Type Checker.

### UNIT-V

1. Explain in detail about Symbol Tables? Also the use of symbol tables?
2. Discuss storage allocation for block structured languages.
3. Write a short note on: Inter Procedural Optimization, Garbage Collection and Reference Counting? Construct DAG for the following code:  
 $A = B + C$   
 $B = A - D$   
 $C = B + C$   
 $D = A - D$
4. Discuss in detail about the Reference counting garbage collectors.

5. Explain in detail about Peephole optimization Techniques each with an example?

## **UNIT-VI**

1. Explain in detail about global common sub-expression & copy propagation optimization techniques each with an example?
2. Explain in detail about dead code elimination & constant folding optimization techniques each with an example?
3. What are the principle sources of optimization? Give the classification of code optimization?
4. Explain in detail about strength reduction & loop optimization techniques each with an example? Write a short note on Instruction Scheduling and Inter Procedural Optimization?
5. Discuss how copy propagation can be done using data flow equation.