Compiler Design IMP Questions

UNIT-1

1. Explain **Language processing system** in detail.

2. Explain the various **phases(structure) of a compiler** with an example in detail.

   Also Write down the output for the following expression after each phase a: =b*c-d.

3. Explain **Role of Lexical Analyzer.**

4. **Differences b/w Lexical analyzer and Parser.**

5. Explain **Token, Lexeme, Pattern** with an example.

6. Recognition of Tokens (i.e., Regular Definitions and Transition diagram for

   identifier, integer constant, real constant,comments.)

7.**Explain Lex Tool(Lexical analyzer generator) in detail with examples.**

UNIT-2

1. **Left most derivation (LMD) and right most derivation (RMD) and parse tree problems.**

2. What is **ambiguous grammar**? Give an example.

3. **Differences b/w top down parsing and bottom up parsing.**

4. **Eliminate Left Recursion, Left Factoring.**

5. Brute Force Parsing(Back Tracking)

6. **Recursive Descent parser.**

7. Write the **rules for calculating FIRST and FOLLOW.**

8. **Problems on Predictive parsing table or LL(1) parsing table.**

9. Define **LL(1) grammar.**

UNIT-3

1. **Problems on shift reduce parsing** and Explain the **four actions and conflicts** in shift reduce parsing .

2. Problems on **SLR, CLR, LALR Parsing Tables.**

3. Compare SLR, LALR and CLR parsers. Which is more powerful.

UNIT-4

1.Expalinin brief about **synthesized and inherited attributes** with an example.

2.Differences b/w **S-attributed and L-attributed grammars** with examples.

3.Explain **SDT** with an example and SDT with prefix notation.

4.What is meant by Syntax tree.Explain the construction of syntax tree with an example.

5.Explain about different **intermediate codes and their representa**tions with example.(Ans:**Types of three address code forms, Quadraples, triples, indirect triples with examples**)

6.Explain about type checking.

7.Discuss about different **storage allocation techniques(Stack,Static,Heap)** with examples.

8. Explain about **storage organization** (Subdivision of run time memory, activation record).

UNIT-5

CODE OPTIMIZATION:

1.Explain in brief about different **Principal sources of optimization techniques with suitable examples(Machine Independent opt)(Transformations).**

2.Explain how Loop invariant Computations can be eliminated.

3.What is meant by basic block .Write an **algorithm to partition a sequence of 3-address statements into basic blocks** and disuss about **flowgraph** with an example.

4.Explain about **DAG** and its construction with the help of an example.

5.Construct DAG for the expression

a=b* -c + b* -c

6.Construct DAG for the following basic block

D:=B*C

E:=A+B

B:=B+C

A:=E-D

7.Examples on DAG.

CODE GENERATION:

1.Explain the generic **issues in the design of code generator.**

2.Explain the different **object code forms** in detail.

3. Explain about **peephole optimization** with example (Machine Dependent opt).

4. Explain **code generation algorithm with example.**

5. Describe various register allocation and register assignment in detail.