**UNIT-1**

1)a)Explain about Language processing system in detail. [6M]**[L2]**

b)Explain the role of lexical analyzer in compiler construction tool process.[4M]**[L2]**

2)Identify the output for the various phases of compiler with respect to the following statements Total = count + rate \* 10. [10M]**[L3]**

3)a)Demonstrate the role of lexical analyzer .[5M]**[L2]**

b)What is a preprocessor? Explain various functions of a preprocessor. [5M]**[L1]**

4)a)Discuss about transition Diagrams. [5M]**[L3]**

b)Explainabout DFA and NFA one example for conversion of NFA to DFA conversion. [5M]**[L2]**

5)Explain in detail about the phases of compilers . [10M]**[L2]**

6)a)Explain the role of lexical analyzer .[5M]**[L2]**

b)Explain in detail about Input buffering. [5M]**[L2]**

7)a)Explain in detail about Input buffering. [5M]**[L2]**

b)Define Transition diagram and represent transition diagram of RELOP operator. [5M]**[L1]**

8) Demonstrate the role of regular expression in lexical analyzer with an example. [10M]**[L2]**

9)a)What is the use of Regular definition in regular expression. [5M]**[L1]**

b)DefineToken,Attribute,Lexeme. [5M]**[L1]**

10 a) Explain the role of a parser. [5M]**[L2]**

b) consider the grammar given below

E ->E+E | E\*E | E-E | a |b obtain leftmost right derivations and their parse trees for the string “a+b\*a+b”.

**UNIT-II**

1)Construct CLR parsing table for the grammar

**S->CC**

**C->cC | d**. [10M] [L3]

2)a) What is left recursion and left factoring? Explain with an example. [5M]**[L1]**

b) Compute First and Follow for the grammar **E->E+T/T, T->T\*F/F, F-> (E)/id**. [5M]**[L2]**

3)a) Illustrate recursive descent parser forthegrammar. [5M]**[L2]**

**S ->cAd**

**A ->ab|a**with astring **cad**

**b)**Constructthe LL (1) for the following grammar [5M]**[L3]**

S –>(L) | a

L –>L, S | S

4) Explain in brief about Dangling- Else Ambiguity. Explain with an example. [10M] [L2]

5)a) Construct predictive LR parsing table for the grammar **S->iEtSeS | iEtS |a**

**E->b.**  [5M]**[L3]**

b) Explain in brief about the shift reduce parser with example. [5M]**[L2]**

6)a) Explain the role of a parser. [5M]**[L2]**

b) Construct the LR parse table for the given grammar. [5M]**[L3]**

**E**->**E+E**

**E**->**E\*E**

**E**->**E-E**

**E**-> **(E) | id.**

7)Findthe validity of the input string *“***id+id\*id***“by* the SLR parser for thegiven grammar

**E**->**E+T | T**

**T**->**T\*F | F**

**F**-> **(E) | id**. [10M]**[L1]**

8) Construct LR (1) parsing table. [10M] [L3]

**S ->Aa , S ->bAc ,S ->Bc ,S ->bBa ,A ->d,B->d** is LR(1)

9)Construct the CLR parsing table for the following grammar: [10M] [L3]

**S->L=R | R**

**L-> \*R | id**

**R->L**

**UNIT-III**

1)Explain in brief about Syntax directed definitions with an example. [10M][L2]

2)Differentiate between L-attributed and S-attributed definitions(or)grammars. [10M][L3]

3)Explain in brief about evolution order of SDD’s with an example. [10M][L2]

4) Explain syntax directed definition for simple calculator and construct annotated parse tree for the input string 3\*5+4n. [10M][L3]

5)Explain in brief about Dependency graph in evolution order of SDD’s with an example. [4M]

6) a)Explain in brief about three address codes. [5M][L2]

b) Translate the arithmetic expression a[i]=b\*c-b\*d into a syntax tree, quadruples and triples.[5M][L3]

7)Explain the role of types and declarations in [10M][L2]

i)Type expressions.

ii)Type Equivalence.

iii)Declarations.

iv)Storage layout in local names.

v)Sequences of Declarations.

8) a)Write a note on simple type checker and list the different types of type

checking.[5M][L3]

b)Generate the three address code for the following code fragment.[5M][L3]

a = b + 1 x = y + 3 y = a / b a = b + c

9) a)Give syntax directed translation scheme for simple desk circulator.[5M][L2]

b)Explain in brief about Backpatching?[5M][L2]

10) What are different intermediate code forms? Discuss different Three Address

code types and implementations of Three Address statements.[10M][L3]

**UNIT-IV**

1. Explain about principle sources of optimization and loop optimization [10M][L2]
2. a)Explain in detail about Basic blocks. [5M][L2]

b) What is flow graph? Explain how flow graph can be constructed for a given problem. [5M][L1]

1. Explain in brief about Basic blocks and Flow graphs?[10M][L2]
2. What is a flow graph? Explain how flow graph can be constructed for a given program.[10M][L2]

Main()

{

int sum, n, i;

sum=0;

for i:=1 to n do

sum:=sum+i;

write(sum);

}

1. What is the role of code Optimizer in compiler? Is it a mandatory phase? Explain the various sources of optimization.[10M]
2. a)Explain data flow equations with an example[5M][L2]

b)Explain about Structure Preserving Transformations[5M]

1. Explain the following peephole optimization techniques?[10M][L3]
2. Elimination of Redundant Code
3. Elimination of Unreachable Code

8) a) Write a short note on peephole optimization and various operations used in it. [6M][L1]

b) Describe Loop unrolling? Describe its advantage with your own examples. [4M][L2]\

9)What is Loop Optimization?Explain various Loop Optimization Techniques with Examples[10M][L2]

10)Define Basic Block?Explain Optimization of Basic Blocks with an example[10M][L2]

**UNIT-V**

1)Explain various storage allocation strategies with its merits and demerits.[10M][L2]

2) Define activation records. Explain how it is related with runtime storage allocation.[10M][L2]

3) What is runtime stack? Explain the storage allocation strategies used for recursive procedure calls.[10M][L2]

4)Explain the main issues in code generation. How to handle them? Discuss.[10M][L2]

5)Discuss about register allocation and assignment in target code generation. [5M]

b) Discuss how induction variables can be detected and eliminated from the given intermediate code [5M]

B2:

i:= i+1

t1:=4\*j

t2:=a[t1]

if t2<10 goto B2

6) How the stack can be allocated in Activation trees and records. [10M][L1]

7)a) With neat sketch explain the activities of caller and callee in stack allocation strategy with an example. What is the role of parameter passing in it? [5M][L1]

b)Explain about Variable length data on the stack. [5M][L2]

8)Explain briefly about [L2]

a)Access links. [2M]

b)Manipulating Access links. [2M]

c)Access links for procedure parameters. [3M]

d)Displays. [3M]

9) a)Explain the following terms:

i) Register Descriptor ii) Address Descriptor iii) Instruction Costs[5M]

b)Give an example to show how DAG is used for register allocation[5M]

10Explain code generation Algorithm with Example?[10M]