

Pune Vidyarthi Griha's
COLLEGE OF ENGINEERING, NASHIK – 4
COMPUTER ENGINEERING DEPARTMENT

Subject : COMPILER

ASSIGNMENT NO – 03

Unit : III

1. Write short notes on a) **Semantic Analyser** b) Syntax Trees
c) Translation Schemes c) Type system & Type Expression
2. What is mean by '**syntax directed definitions**'? Give syntax directed definition for any example arithmetic expression?
3. Differentiate between **L-attributed definitions** and **S-attributed definitions**.
4. What is **need for semantic analysis**? Explain type checker in detail.
5. Generate **annotated parse tree** for following expression: $a*b-c/e + f$
6. Explain bottom-up evaluation of L-attributed grammar.
7. What is type casting? **Explain implicit and explicit type casting**, with example.
What changes should be made in semantic analyzer to add type casting?
8. Write syntax directed translation scheme for simple assignment Statement.
9. Write syntax directed translation scheme for boolean expression and explain the need of backpatching .
10. Define and explain following terms with example
a) Dependency Graph b) Marker Non-terminal symbol
11. **List the commonly used intermediate representation. Give one example of each of one.**
12. Write a translation scheme to generate intermediate code for assignment statements with array references.
13. Generate quadruples and indirect triples for following statement.
 $a = b \wedge (c + d) * f / g$
14. Generate three address code for following code fragment.
sum=0
for (j=1; j<=10; j++)
sum= sum + a[j] + b[j]

15. What is **three address code**? Construct the parse tree for following expression and generate three address code. $A := b+c+d$

16. How intermediate code generation is achieved using YACC. Explain in detail.

17. What is **Backpatching**? How translation of boolean expression is done using backpatching.

18. What is syntax tree? Give YACC specification to generate syntax tree for expression $a + b * c$

19. Given Code : $a = b * c + d$

Write syntax directed translation scheme to translate above code into postfix notation.

20. Generate **3-addr code** for following statements. Specify the translation scheme used.

$$A[i] = B[i] + C$$

$$P = A[i]$$

21. **Compare : Quadruple, Triple, Indirect Triple**

22. Generate **Triple representation** for following :

$$A = -B * (C + D) / E$$

23. Generate **Quadruple** for the following :

$$a = -b * c / e ^ f + g * h$$

24.

Suppose declarations are generated by following grammar : [8]

$D \rightarrow idL$

$L \rightarrow ,idL \mid :T$

$T \rightarrow int \mid real$

Construct a translation scheme to enter the type of each identifier into the symbol table.

25.

Generate three addr statements for following pieces of code :

While ($a < b$)

```
{
  if ( $p < q$  and  $m > n$ )
     $x = x + 1$ ;
  else
     $x = x - 1$ ;
}
```

***** **Best of Luck** *****