

**Question Bank Unit 3&4**

**Subject: Compiler Design                                                         Subject Code: CIC-211**

**Class: B.Tech CSE, V Semester                                                 Faculty Name: Dr. Seema Verma**

**Ms. Sweta**  \_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Differentiate between SDD and SDT with an example.
2. What is the process of identifying basic blocks in the code optimization phase?
3. Write a SDT for converting infix expression to postfix expression by taking suitable examples.
4. Write an SDT to count the number of binary digits in a binary number.(Hint:1011 count is 4)
5. Differentiate between S-attributed and L-attributed SDT. Write the steps to create the SDT for any problem and write SDT for converting any number from binary to decimal.
6. What do you mean by three address codes? Explain how the three address codes are represented via quadruples, triples and Indirect triples with examples.
7. Write the three address code for:
   1. while(a<5)do a:b+2)
8. (ii)-a(a+b)\*(c+d)+(a+b+c)
9. What do you mean by symbol table? Write an example that shows how different phases of the compiler interact with the symbol table.
10. How the data stored in the symbol table for block and non-block is structured languages?
11. What are different types of errors that occur during lexical, syntactic and semantic phases?
12. What do you mean by the term code optimization? What do you understand by the term leader? Write an algorithm to identify the basic Blocks.
13. Identify the basic blocks in the following code and draw the DAG graph for the same:

main()

{

you=0,n=10;

int a[n];

while(i<=(n-1))

A[i]-i\*i;

i=i+1;

return;

1. What do you mean by peephole optimization? Explain with examples.
2. What are the issues that occur during the code generation process?
3. Write short comments on the following:
   * 1. Annotated Parse Tree
     2. LEX Tool
     3. Handle Pruning
     4. Peephole optimization
     5. Machine Dependent Code
     6. Basic blocks & flow graph
     7. DAG
     8. Loop Unrolling & Loop Jamming
4. Define Syntax errors. How are these errors removed by Compiler'?
5. What do you mean by DAG?
6. Explain code optimization and its utility with an example.
7. What are typical entries in the symbol table, what are various data structures used to implement the table?
8. How symbol table space can be reused? Give some examples.
9. Convert the following statements into the Quadruple, Triple and Indirect triple representation: A =-B\* (C+D)
10. How the syntax directed translation scheme implemented? Explain with an example.
11. Compare synthesis and inherited translation.
12. Draw syntax tree for the arithmetic expression a\* (b + c). Write the given expression in postfix notation.
13. Formulate steps to identify the loops in the basic block.
14. Discuss the following in detail
15. i)Semantic preserving transformation
16. ii) Global Common sub expression elimination
17. Explain three techniques for loop optimization with examples.
18. What is the significance of the symbol table in Compiler design?
19. Apply the syntax directed definition to show the working of a simple desk calculator.
20. Support the following statement with suitable justification: “Loop optimization is the core part of optimization in any compiler”.
21. Differentiate between various storage organization strategies in compiler design on the basis of their time complexity.
22. Compare various data structures used for symbol tables with their complexities.
23. How errors are handled in Compiler Design? Briefly describe.
24. Write short note on the following:
    * + 1. Lexical phase error
        2. Syntactic phase errors
        3. Syntactic phase errors
        4. Semantic phase errors
25. What is the optimization? What are the various ways to optimise a computer problem?
26. Describe various loop optimization constructs.
27. What is peephole optimization? How is it performed? Give example of peephole optimization.
28. Discuss the importance of Directed Acyclic Graph (DAG) in the context of compiler design?
29. What is the significance of peephole optimization?
30. How is register allocation and assignment handled?