

B.TECH.**THEORY EXAMINATION (SEM-VI) 2016-17****COMPILER DESIGN***Time : 3 Hours**Max. Marks : 100**Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.***SECTION – A****1. Attempt the following:****10 x 2 = 20**

- State any two reasons as to why phases of compiler should be grouped.
- Write regular expression to describe a language consist of strings made of even numbers a & b.
- Write a CF grammar to represent palindrome.
- Why are quadruples preferred over triples in an optimizing compiler?
- Give syntax directed translation for case statement.
- What is a syntax tree? Draw the syntax tree for the following statement: $c\ b\ c\ b\ a - * + - * =$
- How to perform register assignment for outer loops?
- List out the criteria for code improving transformations.
- Represent the following in flow graph $i=1;sum=0;while\ (i\leq\ 10)\{sum+=i;i++\}$
- What is the use of algebraic identities in optimization of basic blocks?

SECTION – B**2. Attempt any five of the following questions:****5 x 10 = 50**

- Explain in detail the process of compilation. Illustrate the output of each phase of compilation of the input $"a=(b+c)*(b+c)*2"$.
- Construct the minimized DFA for the regular expression $(0+1)^*(0+1)10$.
- What is an ambiguous grammar? Is the following grammar ambiguous? Prove $EE+|E(E)|\epsilon$. The grammar should be moved to the next line ,centered.
- Draw NFA for the regular expression ab^*/ab .
- How names can be looked up in the symbol table? Discuss.
- Write an algorithm to partition a sequence of three address statements into basic blocks.
- Discuss in detail the process of optimization of basic blocks. Give an example
- How to subdivide a run-time memory into code and data areas. Explain

SECTION – C**Attempt any two of the following questions:****2 x 15 = 30****3** Consider the following grammar

S-AS|b

A-SA|a.

Construct the SLR parse table for the grammar. Show the actions of the parser for the input string "abab".

4 How would you convert the following into intermediate code? Give a suitable example.

i) Assignment Statements. ii) Case Statements

5 Define a directed acyclic graph. Construct a DAG and write the sequence of instructions for the expression $a+a*(b-c)+(b-c)*d$.