

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****

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

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