Printed Pages : 1 Roll No. ECS603

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.