B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

June, 2015

⯀⯀⯀⯀

BICS-016 : SYSTEM PROGRAMMING AND COMPILER DESIGN

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks.*

1. (a) Construct Minimum State DFA for the following regular expression :   5

    (a | b)* a (a | b)

   (b) Explain the basic structure of a compiler.   5

2. (a) Write the prefix and postfix expression.   5

    A = (20 + (– 5) * 6 + 12)

   (b) What is left recursion ? Write the rule to eliminate left recursion.   5

3. Differentiate between the following :   2×5=10

   (a) Top down and Bottom up Parsing

   (b) NFA and DFA

4. What is the role of lexical analyzer ? Enumerate the issues handled by a lexical analyzer. *10*

5. Construct DAG for the following expression :
    $(a + b) - (e - (c + d))$ *10*

6. (a) What is meant by ambiguous grammar ? How can ambiguity be avoided ? *5*

   (b) What are the advantages of LALR over SLR parsers ? *5*

7. Define code optimization. Explain the different loop optimization techniques with examples. *10*

8. Explain the concept of global data flow analysis. *10*

9. Define a Quadruple. How is it different from triples ? Convert the following expression into three address code and quadruple.
    $S = (a + b) / (c - d) * (e + f)$ *10*

10. Write short notes on any *two* of the following terms : *2×5=10*

    (a) Depth First Search

    (b) Macro Pre-processor

    (c) Boot Strapping

    (d) Semantics Errors