

**B.Tech. IN COMPUTER SCIENCE &
ENGINEERING**

Term-End Examination

December, 2013

**BICS-016 : SYSTEM PROGRAMMING AND
COMPILER DESIGN**

Time : 3 hours

Maximum Marks : 70

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

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|----|--|--------|
| 1. | (a) Define a finite automates. Construct an NFA for the following RE
aa^*/bb^* | 6 |
| | (b) Minimize the NFA obtained in 1(a) to DFA. | 4 |
| 2. | Consider the following grammer.
$S \rightarrow cc$
$C \rightarrow cC/d$
Construct the SLR set of items & the parsing table for the above grammar. | 10 |
| 3. | (a) Translate the following into post fix form.
(i) if a then if a-b then c - d else a*c else a + b
(ii) $a^* - (b + c)/d$ | 8 |
| | (b) Define symbol table. | 2 |
| 4. | Differentiate between :
(a) Top down & bottom up passess.
(b) NFA and DFA. | 5x2=10 |

5. (a) Write quadruples, triples & indirect triples for the following expression. 6
 $A = -b^*(c+d)*e$
- (b) How the syntax tree is different from DAG ? 4
6. Construct a reduced automata for the RE aa^*/bb^* 10
7. (a) Consider the following grammar. 6
 $S \rightarrow Ba/bBC/de/bda$
 $B \rightarrow d$
 Construct the SLR parser for the above grammar.
- (b) What are the advantages of LALR over SLE parsers ? 4
8. (a) Explain the various phases of compiler. 6
- (b) What are the various compiler construction tools ? Explain any one of them. 4
9. (a) What is ambiguous grammar ? Explain with an example. 5
- (b) Write an algorithm for generating code from directed acyclic graph. 5
10. Write short notes on the following terms (any two) : 5x2=10
- (a) Boot strapping.
- (b) Regular expression.
- (c) DAG
- (d) Laxeme.
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