

**B.E. 7th Semester (CSE) Examination,
May-2012**

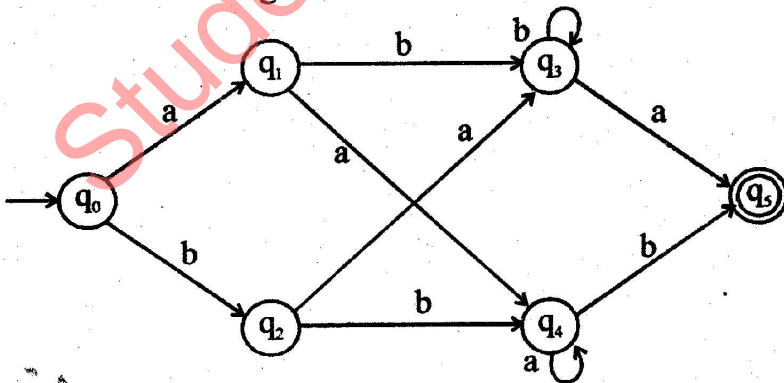
COMPLIER DESIGN

Paper-CSE-405-E

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt any five questions.

1. (a) What do you mean by compiler ? Explain various phases of compiler. 14
- (b) What is the use of cross compiler ? Differentiate between compiler and interpreter. 6
2. (a) Construct a minimal state DFA for the following regular expression : 14
 $a \cdot (a + b)^* \cdot b \cdot b$
- (b) Obtain regular expression equivalent to the following finite automata : 6



3. (a) Remove the unit production from the following grammar : 10

$$S \rightarrow AB$$

$$A \rightarrow a$$

$$B \rightarrow C \mid b$$

$$C \rightarrow D$$

$$D \rightarrow E$$

$$E \rightarrow a$$

- (b) Consider the following grammar : 10

$$S \rightarrow ABC$$

$$A \rightarrow Aa \mid d$$

$$B \rightarrow Bb \mid e$$

$$C \rightarrow Cc \mid f$$

Eliminate left recursion from the above grammar.

4. Construct a predictive parsing table for the following grammar where $S|$ is a start symbol and $\#$ is the end marker. 20

$$S| \rightarrow S\#$$

$S \rightarrow qABC$

$A \rightarrow a|bbD$

$B \rightarrow a|\epsilon$

$C \rightarrow b|\epsilon$

$D \rightarrow c|\epsilon$

5. Construct an SLR (1) parsing table for the following grammar :

$S \rightarrow OSO|IS1|10$ 20

6. (a) What do you mean by intermediate code generation ? Explain various intermediate code generation schemes. 10

- (b) Convert the following statement into the Quadruple, Triple and indirect triple representation :

$X = (a - b) * c - (x + y) + a$ 10

7. (a) What is the use of symbol table ? Explain the various data structures associated with symbol table. 10

- (b) Explain the various types of errors generated during the various phases of the compiler. How do we recover from these errors ? 10

8. Write short notes on the following :

- (a) Cross Compiler
- (b) Loop Unrolling
- (c) YACC
- (d) Parse Tree.